

Table
Rating Table for Irregular Channel

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft ²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------|-----------------|-----------------|------------------------------|-----------------------|----------------|
| 0.013700 | 114.02 | 6.17 | 18.5 | 50.12 | 50.00 |
| 0.013800 | 114.44 | 6.19 | 18.5 | 50.12 | 50.00 |
| 0.013900 | 114.85 | 6.21 | 18.5 | 50.12 | 50.00 |
| 0.014000 | 115.27 | 6.24 | 18.5 | 50.12 | 50.00 |
| 0.014100 | 115.68 | 6.26 | 18.5 | 50.12 | 50.00 |
| 0.014200 | 116.09 | 6.28 | 18.5 | 50.12 | 50.00 |
| 0.014300 | 116.49 | 6.30 | 18.5 | 50.12 | 50.00 |
| 0.014400 | 116.90 | 6.33 | 18.5 | 50.12 | 50.00 |
| 0.014500 | 117.31 | 6.35 | 18.5 | 50.12 | 50.00 |
| 0.014600 | 117.71 | 6.37 | 18.5 | 50.12 | 50.00 |
| 0.014700 | 118.11 | 6.39 | 18.5 | 50.12 | 50.00 |
| 0.014800 | 118.51 | 6.41 | 18.5 | 50.12 | 50.00 |
| 0.014900 | 118.91 | 6.43 | 18.5 | 50.12 | 50.00 |
| 0.015000 | 119.31 | 6.46 | 18.5 | 50.12 | 50.00 |
| 0.015100 | 119.71 | 6.48 | 18.5 | 50.12 | 50.00 |
| 0.015200 | 120.10 | 6.50 | 18.5 | 50.12 | 50.00 |
| 0.015300 | 120.50 | 6.52 | 18.5 | 50.12 | 50.00 |
| 0.015400 | 120.89 | 6.54 | 18.5 | 50.12 | 50.00 |
| 0.015500 | 121.28 | 6.56 | 18.5 | 50.12 | 50.00 |
| 0.015600 | 121.67 | 6.58 | 18.5 | 50.12 | 50.00 |
| 0.015700 | 122.06 | 6.60 | 18.5 | 50.12 | 50.00 |
| 0.015800 | 122.45 | 6.63 | 18.5 | 50.12 | 50.00 |
| 0.015900 | 122.84 | 6.65 | 18.5 | 50.12 | 50.00 |
| 0.016000 | 123.22 | 6.67 | 18.5 | 50.12 | 50.00 |
| 0.016100 | 123.61 | 6.69 | 18.5 | 50.12 | 50.00 |
| 0.016200 | 123.99 | 6.71 | 18.5 | 50.12 | 50.00 |
| 0.016300 | 124.37 | 6.73 | 18.5 | 50.12 | 50.00 |
| 0.016400 | 124.76 | 6.75 | 18.5 | 50.12 | 50.00 |
| 0.016500 | 125.14 | 6.77 | 18.5 | 50.12 | 50.00 |
| 0.016600 | 125.51 | 6.79 | 18.5 | 50.12 | 50.00 |
| 0.016700 | 125.89 | 6.81 | 18.5 | 50.12 | 50.00 |
| 0.016800 | 126.27 | 6.83 | 18.5 | 50.12 | 50.00 |
| 0.016900 | 126.64 | 6.85 | 18.5 | 50.12 | 50.00 |
| 0.017000 | 127.02 | 6.87 | 18.5 | 50.12 | 50.00 |
| 0.017100 | 127.39 | 6.89 | 18.5 | 50.12 | 50.00 |
| 0.017200 | 127.76 | 6.91 | 18.5 | 50.12 | 50.00 |
| 0.017300 | 128.13 | 6.93 | 18.5 | 50.12 | 50.00 |
| 0.017400 | 128.50 | 6.95 | 18.5 | 50.12 | 50.00 |
| 0.017500 | 128.87 | 6.97 | 18.5 | 50.12 | 50.00 |
| 0.017600 | 129.24 | 6.99 | 18.5 | 50.12 | 50.00 |
| 0.017700 | 129.61 | 7.01 | 18.5 | 50.12 | 50.00 |
| 0.017800 | 129.97 | 7.03 | 18.5 | 50.12 | 50.00 |
| 0.017900 | 130.34 | 7.05 | 18.5 | 50.12 | 50.00 |
| 0.018000 | 130.70 | 7.07 | 18.5 | 50.12 | 50.00 |
| 0.018100 | 131.06 | 7.09 | 18.5 | 50.12 | 50.00 |
| 0.018200 | 131.42 | 7.11 | 18.5 | 50.12 | 50.00 |
| 0.018300 | 131.78 | 7.13 | 18.5 | 50.12 | 50.00 |
| 0.018400 | 132.14 | 7.15 | 18.5 | 50.12 | 50.00 |
| 0.018500 | 132.50 | 7.17 | 18.5 | 50.12 | 50.00 |
| 0.018600 | 132.86 | 7.19 | 18.5 | 50.12 | 50.00 |
| 0.018700 | 133.22 | 7.21 | 18.5 | 50.12 | 50.00 |
| 0.018800 | 133.57 | 7.23 | 18.5 | 50.12 | 50.00 |
| 0.018900 | 133.93 | 7.25 | 18.5 | 50.12 | 50.00 |

Table
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| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft ²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------|-----------------|-----------------|------------------------------|-----------------------|----------------|
| 0.019000 | 134.28 | 7.27 | 18.5 | 50.12 | 50.00 |
| 0.019100 | 134.63 | 7.28 | 18.5 | 50.12 | 50.00 |
| 0.019200 | 134.99 | 7.30 | 18.5 | 50.12 | 50.00 |
| 0.019300 | 135.34 | 7.32 | 18.5 | 50.12 | 50.00 |
| 0.019400 | 135.69 | 7.34 | 18.5 | 50.12 | 50.00 |
| 0.019500 | 136.04 | 7.36 | 18.5 | 50.12 | 50.00 |
| 0.019600 | 136.38 | 7.38 | 18.5 | 50.12 | 50.00 |
| 0.019700 | 136.73 | 7.40 | 18.5 | 50.12 | 50.00 |
| 0.019800 | 137.08 | 7.42 | 18.5 | 50.12 | 50.00 |
| 0.019900 | 137.42 | 7.44 | 18.5 | 50.12 | 50.00 |
| 0.020000 | 137.77 | 7.45 | 18.5 | 50.12 | 50.00 |

Cross Section Cross Section for Irregular Channel

| Project Description | |
|----------------------|-------------------|
| Worksheet | Collector Str 60P |
| Flow Element | Irregular Channel |
| Method | Manning's Formu |
| Solve For | Discharge |
| Section Data | |
| Mannings Coefficient | 0.014 |
| Channel Slope | 0.005000 ft/ft |
| Water Surface Elev. | 100.67 ft |
| Elevation Range | 100.00 to 100.67 |
| Discharge | 73.88 cfs |

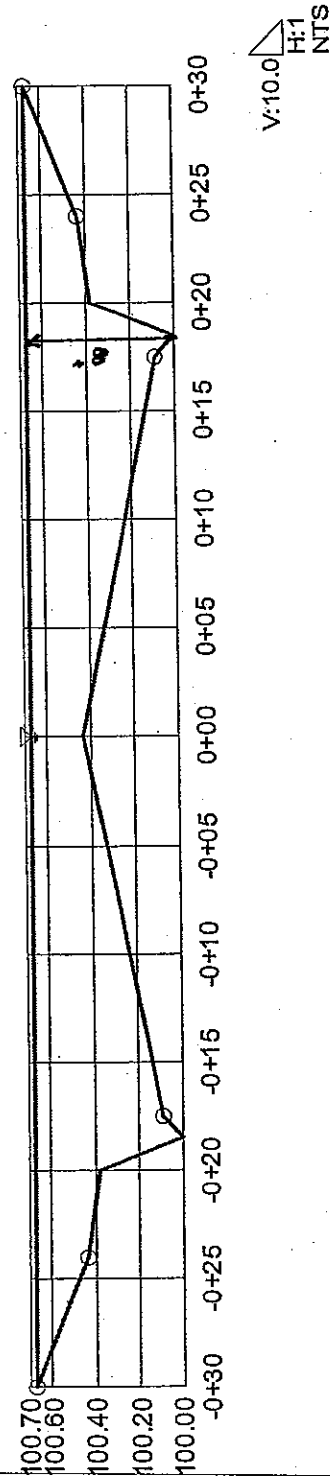


Table
Rating Table for Irregular Channel

| Project Description | |
|---------------------|--------------------|
| Worksheet | Collector Str 60°F |
| Flow Element | Irregular Channel |
| Method | Manning's Formu |
| Solve For | Discharge |

| Input Data |
|------------------------------|
| Water Surface Elev. 00.67 ft |

| Options |
|--|
| Current Roughness Method ved Lotter's Method |
| Open Channel Weighting ved Lotter's Method |
| Closed Channel Weighting Horton's Method |

| Attribute | Minimum | Maximum | Increment |
|-----------------------|----------|----------|-----------|
| Channel Slope (ft/ft) | 0.005000 | 0.020000 | 0.000100 |

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------|-----------------|-----------------|-----------------|-----------------------|----------------|
| 0.005000 | 73.88 | 3.58 | 20.7 | 60.12 | 60.00 |
| 0.005100 | 74.61 | 3.61 | 20.7 | 60.12 | 60.00 |
| 0.005200 | 75.34 | 3.65 | 20.7 | 60.12 | 60.00 |
| 0.005300 | 76.06 | 3.68 | 20.7 | 60.12 | 60.00 |
| 0.005400 | 76.78 | 3.72 | 20.7 | 60.12 | 60.00 |
| 0.005500 | 77.49 | 3.75 | 20.7 | 60.12 | 60.00 |
| 0.005600 | 78.19 | 3.79 | 20.7 | 60.12 | 60.00 |
| 0.005700 | 78.88 | 3.82 | 20.7 | 60.12 | 60.00 |
| 0.005800 | 79.57 | 3.85 | 20.7 | 60.12 | 60.00 |
| 0.005900 | 80.25 | 3.89 | 20.7 | 60.12 | 60.00 |
| 0.006000 | 80.93 | 3.92 | 20.7 | 60.12 | 60.00 |
| 0.006100 | 81.60 | 3.95 | 20.7 | 60.12 | 60.00 |
| 0.006200 | 82.27 | 3.98 | 20.7 | 60.12 | 60.00 |
| 0.006300 | 82.93 | 4.02 | 20.7 | 60.12 | 60.00 |
| 0.006400 | 83.59 | 4.05 | 20.7 | 60.12 | 60.00 |
| 0.006500 | 84.24 | 4.08 | 20.7 | 60.12 | 60.00 |
| 0.006600 | 84.88 | 4.11 | 20.7 | 60.12 | 60.00 |
| 0.006700 | 85.52 | 4.14 | 20.7 | 60.12 | 60.00 |
| 0.006800 | 86.16 | 4.17 | 20.7 | 60.12 | 60.00 |
| 0.006900 | 86.79 | 4.20 | 20.7 | 60.12 | 60.00 |
| 0.007000 | 87.42 | 4.23 | 20.7 | 60.12 | 60.00 |
| 0.007100 | 88.04 | 4.26 | 20.7 | 60.12 | 60.00 |
| 0.007200 | 88.66 | 4.29 | 20.7 | 60.12 | 60.00 |
| 0.007300 | 89.27 | 4.32 | 20.7 | 60.12 | 60.00 |
| 0.007400 | 89.88 | 4.35 | 20.7 | 60.12 | 60.00 |
| 0.007500 | 90.48 | 4.38 | 20.7 | 60.12 | 60.00 |
| 0.007600 | 91.08 | 4.41 | 20.7 | 60.12 | 60.00 |
| 0.007700 | 91.68 | 4.44 | 20.7 | 60.12 | 60.00 |
| 0.007800 | 92.28 | 4.47 | 20.7 | 60.12 | 60.00 |
| 0.007900 | 92.87 | 4.50 | 20.7 | 60.12 | 60.00 |
| 0.008000 | 93.45 | 4.52 | 20.7 | 60.12 | 60.00 |
| 0.008100 | 94.03 | 4.55 | 20.7 | 60.12 | 60.00 |
| 0.008200 | 94.61 | 4.58 | 20.7 | 60.12 | 60.00 |
| 0.008300 | 95.19 | 4.61 | 20.7 | 60.12 | 60.00 |

Project Engineer: Information Services

FlowMaster v7.0 [7.0005

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Stanley Consultants, Inc

12/30/05 11:15:41 AM © Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

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| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft ²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------|-----------------|-----------------|------------------------------|-----------------------|----------------|
| 0.008400 | 95.76 | 4.64 | 20.7 | 60.12 | 60.00 |
| 0.008500 | 96.33 | 4.66 | 20.7 | 60.12 | 60.00 |
| 0.008600 | 96.89 | 4.69 | 20.7 | 60.12 | 60.00 |
| 0.008700 | 97.45 | 4.72 | 20.7 | 60.12 | 60.00 |
| 0.008800 | 98.01 | 4.75 | 20.7 | 60.12 | 60.00 |
| 0.008900 | 98.57 | 4.77 | 20.7 | 60.12 | 60.00 |
| 0.009000 | 99.12 | 4.80 | 20.7 | 60.12 | 60.00 |
| 0.009100 | 99.67 | 4.83 | 20.7 | 60.12 | 60.00 |
| 0.009200 | 100.21 | 4.85 | 20.7 | 60.12 | 60.00 |
| 0.009300 | 100.76 | 4.88 | 20.7 | 60.12 | 60.00 |
| 0.009400 | 101.30 | 4.90 | 20.7 | 60.12 | 60.00 |
| 0.009500 | 101.84 | 4.93 | 20.7 | 60.12 | 60.00 |
| 0.009600 | 102.37 | 4.96 | 20.7 | 60.12 | 60.00 |
| 0.009700 | 102.90 | 4.98 | 20.7 | 60.12 | 60.00 |
| 0.009800 | 103.43 | 5.01 | 20.7 | 60.12 | 60.00 |
| 0.009900 | 103.96 | 5.03 | 20.7 | 60.12 | 60.00 |
| 0.010000 | 104.48 | 5.06 | 20.7 | 60.12 | 60.00 |
| 0.010100 | 105.00 | 5.08 | 20.7 | 60.12 | 60.00 |
| 0.010200 | 105.52 | 5.11 | 20.7 | 60.12 | 60.00 |
| 0.010300 | 106.04 | 5.13 | 20.7 | 60.12 | 60.00 |
| 0.010400 | 106.55 | 5.16 | 20.7 | 60.12 | 60.00 |
| 0.010500 | 107.06 | 5.18 | 20.7 | 60.12 | 60.00 |
| 0.010600 | 107.57 | 5.21 | 20.7 | 60.12 | 60.00 |
| 0.010700 | 108.08 | 5.23 | 20.7 | 60.12 | 60.00 |
| 0.010800 | 108.58 | 5.26 | 20.7 | 60.12 | 60.00 |
| 0.010900 | 109.08 | 5.28 | 20.7 | 60.12 | 60.00 |
| 0.011000 | 109.58 | 5.31 | 20.7 | 60.12 | 60.00 |
| 0.011100 | 110.08 | 5.33 | 20.7 | 60.12 | 60.00 |
| 0.011200 | 110.57 | 5.35 | 20.7 | 60.12 | 60.00 |
| 0.011300 | 111.07 | 5.38 | 20.7 | 60.12 | 60.00 |
| 0.011400 | 111.56 | 5.40 | 20.7 | 60.12 | 60.00 |
| 0.011500 | 112.04 | 5.42 | 20.7 | 60.12 | 60.00 |
| 0.011600 | 112.53 | 5.45 | 20.7 | 60.12 | 60.00 |
| 0.011700 | 113.01 | 5.47 | 20.7 | 60.12 | 60.00 |
| 0.011800 | 113.50 | 5.49 | 20.7 | 60.12 | 60.00 |
| 0.011900 | 113.98 | 5.52 | 20.7 | 60.12 | 60.00 |
| 0.012000 | 114.45 | 5.54 | 20.7 | 60.12 | 60.00 |
| 0.012100 | 114.93 | 5.56 | 20.7 | 60.12 | 60.00 |
| 0.012200 | 115.40 | 5.59 | 20.7 | 60.12 | 60.00 |
| 0.012300 | 115.88 | 5.61 | 20.7 | 60.12 | 60.00 |
| 0.012400 | 116.35 | 5.63 | 20.7 | 60.12 | 60.00 |
| 0.012500 | 116.81 | 5.66 | 20.7 | 60.12 | 60.00 |
| 0.012600 | 117.28 | 5.68 | 20.7 | 60.12 | 60.00 |
| 0.012700 | 117.74 | 5.70 | 20.7 | 60.12 | 60.00 |
| 0.012800 | 118.21 | 5.72 | 20.7 | 60.12 | 60.00 |
| 0.012900 | 118.67 | 5.75 | 20.7 | 60.12 | 60.00 |
| 0.013000 | 119.13 | 5.77 | 20.7 | 60.12 | 60.00 |
| 0.013100 | 119.58 | 5.79 | 20.7 | 60.12 | 60.00 |
| 0.013200 | 120.04 | 5.81 | 20.7 | 60.12 | 60.00 |
| 0.013300 | 120.49 | 5.83 | 20.7 | 60.12 | 60.00 |
| 0.013400 | 120.95 | 5.86 | 20.7 | 60.12 | 60.00 |
| 0.013500 | 121.40 | 5.88 | 20.7 | 60.12 | 60.00 |
| 0.013600 | 121.85 | 5.90 | 20.7 | 60.12 | 60.00 |

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| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------|-----------------|-----------------|-----------------|-----------------------|----------------|
| 0.013700 | 122.29 | 5.92 | 20.7 | 60.12 | 60.00 |
| 0.013800 | 122.74 | 5.94 | 20.7 | 60.12 | 60.00 |
| 0.013900 | 123.18 | 5.96 | 20.7 | 60.12 | 60.00 |
| 0.014000 | 123.62 | 5.99 | 20.7 | 60.12 | 60.00 |
| 0.014100 | 124.06 | 6.01 | 20.7 | 60.12 | 60.00 |
| 0.014200 | 124.50 | 6.03 | 20.7 | 60.12 | 60.00 |
| 0.014300 | 124.94 | 6.05 | 20.7 | 60.12 | 60.00 |
| 0.014400 | 125.38 | 6.07 | 20.7 | 60.12 | 60.00 |
| 0.014500 | 125.81 | 6.09 | 20.7 | 60.12 | 60.00 |
| 0.014600 | 126.25 | 6.11 | 20.7 | 60.12 | 60.00 |
| 0.014700 | 126.68 | 6.13 | 20.7 | 60.12 | 60.00 |
| 0.014800 | 127.11 | 6.15 | 20.7 | 60.12 | 60.00 |
| 0.014900 | 127.54 | 6.17 | 20.7 | 60.12 | 60.00 |
| 0.015000 | 127.96 | 6.20 | 20.7 | 60.12 | 60.00 |
| 0.015100 | 128.39 | 6.22 | 20.7 | 60.12 | 60.00 |
| 0.015200 | 128.81 | 6.24 | 20.7 | 60.12 | 60.00 |
| 0.015300 | 129.24 | 6.26 | 20.7 | 60.12 | 60.00 |
| 0.015400 | 129.66 | 6.28 | 20.7 | 60.12 | 60.00 |
| 0.015500 | 130.08 | 6.30 | 20.7 | 60.12 | 60.00 |
| 0.015600 | 130.50 | 6.32 | 20.7 | 60.12 | 60.00 |
| 0.015700 | 130.91 | 6.34 | 20.7 | 60.12 | 60.00 |
| 0.015800 | 131.33 | 6.36 | 20.7 | 60.12 | 60.00 |
| 0.015900 | 131.75 | 6.38 | 20.7 | 60.12 | 60.00 |
| 0.016000 | 132.16 | 6.40 | 20.7 | 60.12 | 60.00 |
| 0.016100 | 132.57 | 6.42 | 20.7 | 60.12 | 60.00 |
| 0.016200 | 132.98 | 6.44 | 20.7 | 60.12 | 60.00 |
| 0.016300 | 133.39 | 6.46 | 20.7 | 60.12 | 60.00 |
| 0.016400 | 133.80 | 6.48 | 20.7 | 60.12 | 60.00 |
| 0.016500 | 134.21 | 6.50 | 20.7 | 60.12 | 60.00 |
| 0.016600 | 134.61 | 6.52 | 20.7 | 60.12 | 60.00 |
| 0.016700 | 135.02 | 6.54 | 20.7 | 60.12 | 60.00 |
| 0.016800 | 135.42 | 6.56 | 20.7 | 60.12 | 60.00 |
| 0.016900 | 135.83 | 6.58 | 20.7 | 60.12 | 60.00 |
| 0.017000 | 136.23 | 6.60 | 20.7 | 60.12 | 60.00 |
| 0.017100 | 136.63 | 6.61 | 20.7 | 60.12 | 60.00 |
| 0.017200 | 137.03 | 6.63 | 20.7 | 60.12 | 60.00 |
| 0.017300 | 137.42 | 6.65 | 20.7 | 60.12 | 60.00 |
| 0.017400 | 137.82 | 6.67 | 20.7 | 60.12 | 60.00 |
| 0.017500 | 138.22 | 6.69 | 20.7 | 60.12 | 60.00 |
| 0.017600 | 138.61 | 6.71 | 20.7 | 60.12 | 60.00 |
| 0.017700 | 139.00 | 6.73 | 20.7 | 60.12 | 60.00 |
| 0.017800 | 139.40 | 6.75 | 20.7 | 60.12 | 60.00 |
| 0.017900 | 139.79 | 6.77 | 20.7 | 60.12 | 60.00 |
| 0.018000 | 140.18 | 6.79 | 20.7 | 60.12 | 60.00 |
| 0.018100 | 140.57 | 6.81 | 20.7 | 60.12 | 60.00 |
| 0.018200 | 140.95 | 6.82 | 20.7 | 60.12 | 60.00 |
| 0.018300 | 141.34 | 6.84 | 20.7 | 60.12 | 60.00 |
| 0.018400 | 141.73 | 6.86 | 20.7 | 60.12 | 60.00 |
| 0.018500 | 142.11 | 6.88 | 20.7 | 60.12 | 60.00 |
| 0.018600 | 142.49 | 6.90 | 20.7 | 60.12 | 60.00 |
| 0.018700 | 142.88 | 6.92 | 20.7 | 60.12 | 60.00 |
| 0.018800 | 143.26 | 6.94 | 20.7 | 60.12 | 60.00 |
| 0.018900 | 143.64 | 6.95 | 20.7 | 60.12 | 60.00 |

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| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft ²) | Wetted Perimeter (ft) | Top Width (ft) |
|-----------------------------|--------------------|--------------------|------------------------------------|-----------------------------|----------------------|
| 0.019000 | 144.02 | 6.97 | 20.7 | 60.12 | 60.00 |
| 0.019100 | 144.40 | 6.99 | 20.7 | 60.12 | 60.00 |
| 0.019200 | 144.77 | 7.01 | 20.7 | 60.12 | 60.00 |
| 0.019300 | 145.15 | 7.03 | 20.7 | 60.12 | 60.00 |
| 0.019400 | 145.53 | 7.05 | 20.7 | 60.12 | 60.00 |
| 0.019500 | 145.90 | 7.06 | 20.7 | 60.12 | 60.00 |
| 0.019600 | 146.27 | 7.08 | 20.7 | 60.12 | 60.00 |
| 0.019700 | 146.65 | 7.10 | 20.7 | 60.12 | 60.00 |
| 0.019800 | 147.02 | 7.12 | 20.7 | 60.12 | 60.00 |
| 0.019900 | 147.39 | 7.14 | 20.7 | 60.12 | 60.00 |
| 0.020000 | 147.76 | 7.15 | 20.7 | 60.12 | 60.00 |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|----------------------------|
| Worksheet | Channel J-B (rev 20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 3.00 H : V |
| Right Side Slope | 3.00 H : V |
| Bottom Width | 25.00 ft |
| Discharge | 778.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.52 ft |
| Flow Area | 82.2 ft ² |
| Wetted Perimeter | 40.97 ft |
| Top Width | 40.15 ft |
| Critical Depth | 2.77 ft |
| Critical Slope | 0.007188 ft/ft |
| Velocity | 9.46 ft/s |
| Velocity Head | 1.39 ft |
| Specific Energy | 3.92 ft |
| Froude Number | 1.17 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|------------------------|
| Worksheet | Channel J-A (20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Bottom Width | 4.00 ft |
| Discharge | 271.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.53 ft |
| Flow Area | 35.8 ft ² |
| Wetted Perimeter | 24.88 ft |
| Top Width | 24.26 ft |
| Critical Depth | 2.65 ft |
| Critical Slope | 0.008172 ft/ft |
| Velocity | 7.57 ft/s |
| Velocity Head | 0.89 ft |
| Specific Energy | 3.42 ft |
| Froude Number | 1.10 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Triangular Channel

| Project Description | |
|---------------------|----------------------------|
| Worksheet | Channel OS_3 (rev20060521) |
| Flow Element | Triangular Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Discharge | 149.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.38 ft |
| Flow Area | 22.7 ft ² |
| Wetted Perimeter | 19.67 ft |
| Top Width | 19.08 ft |
| Critical Depth | 2.44 ft |
| Critical Slope | 0.008872 ft/ft |
| Velocity | 6.55 ft/s |
| Velocity Head | 0.67 ft |
| Specific Energy | 3.05 ft |
| Froude Number | 1.06 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|-------------------------|
| Worksheet | Channel OS-8 (20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Bottom Width | 5.00 ft |
| Discharge | 409.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.92 ft |
| Flow Area | 48.8 ft ² |
| Wetted Perimeter | 29.10 ft |
| Top Width | 28.38 ft |
| Critical Depth | 3.09 ft |
| Critical Slope | 0.007734 ft/ft |
| Velocity | 8.39 ft/s |
| Velocity Head | 1.09 ft |
| Specific Energy | 4.02 ft |
| Froude Number | 1.13 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|-------------------------|
| Worksheet | Channel OS-6 (20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Bottom Width | 4.00 ft |
| Discharge | 328.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.75 ft |
| Flow Area | 41.3 ft ² |
| Wetted Perimeter | 26.68 ft |
| Top Width | 26.00 ft |
| Critical Depth | 2.89 ft |
| Critical Slope | 0.007969 ft/ft |
| Velocity | 7.95 ft/s |
| Velocity Head | 0.98 ft |
| Specific Energy | 3.73 ft |
| Froude Number | 1.11 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|------------------------|
| Worksheet | Channel J-D (20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.010000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Bottom Width | 4.00 ft |
| Discharge | 386.00 cfs |

| Results | |
|------------------|----------------------|
| Depth | 2.95 ft |
| Flow Area | 46.6 ft ² |
| Wetted Perimeter | 28.32 ft |
| Top Width | 27.60 ft |
| Critical Depth | 3.11 ft |
| Critical Slope | 0.007795 ft/ft |
| Velocity | 8.28 ft/s |
| Velocity Head | 1.07 ft |
| Specific Energy | 4.02 ft |
| Froude Number | 1.12 |
| Flow Type | Supercritical |

Worksheet

Worksheet for Trapezoidal Channel

| Project Description | |
|---------------------|-------------------------|
| Worksheet | Channel J-N5 (20060521) |
| Flow Element | Trapezoidal Channel |
| Method | Manning's Formula |
| Solve For | Channel Depth |

| Input Data | |
|----------------------|----------------|
| Mannings Coefficient | 0.025 |
| Channel Slope | 0.005000 ft/ft |
| Left Side Slope | 4.00 H : V |
| Right Side Slope | 4.00 H : V |
| Bottom Width | 25.00 ft |
| Discharge | 722.00 cfs |

| Results | |
|------------------|-----------------------|
| Depth | 2.85 ft |
| Flow Area | 103.6 ft ² |
| Wetted Perimeter | 48.47 ft |
| Top Width | 47.77 ft |
| Critical Depth | 2.56 ft |
| Critical Slope | 0.007381 ft/ft |
| Velocity | 6.97 ft/s |
| Velocity Head | 0.76 ft |
| Specific Energy | 3.60 ft |
| Froude Number | 0.83 |
| Flow Type | Subcritical |

GOLDEN VALLEY RANCH

APPENDIX D

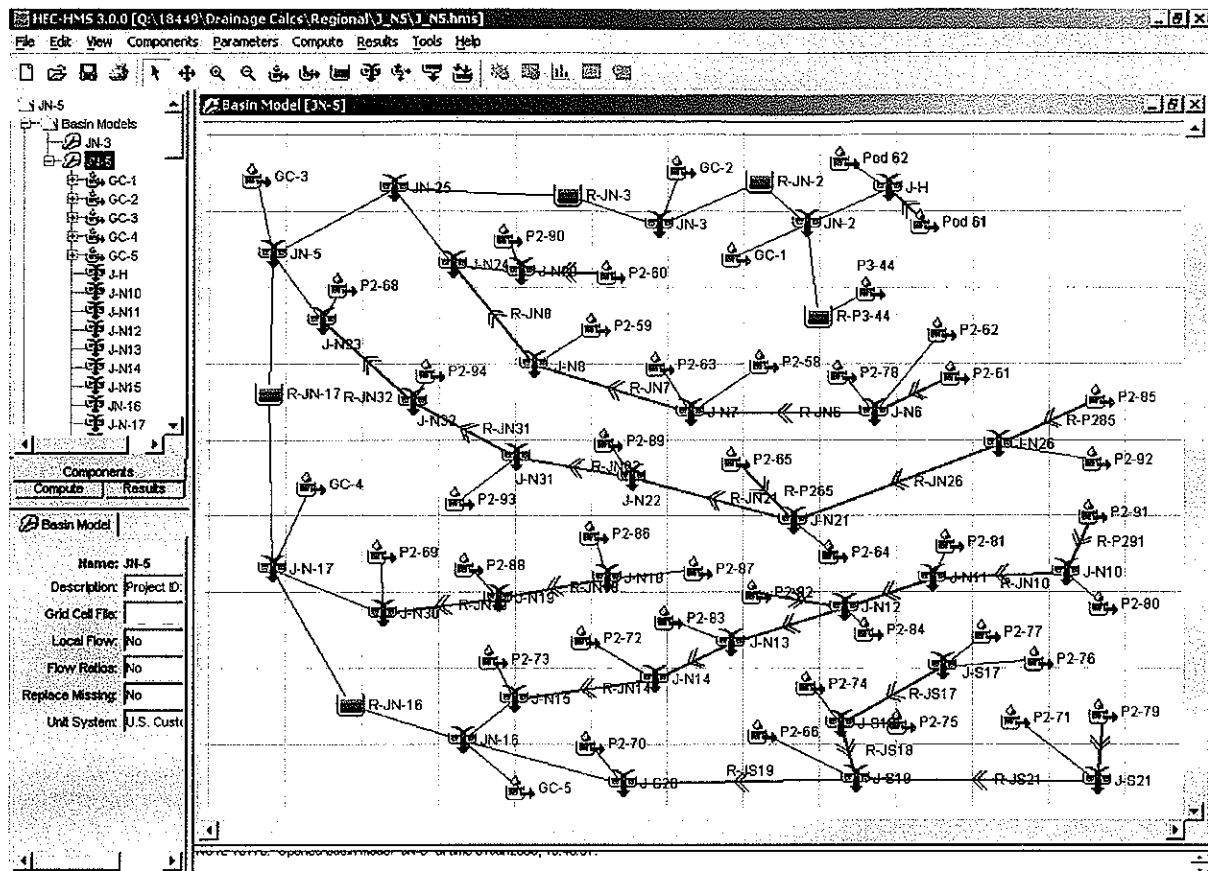
HYDROLOGY – (AREAS 1 – 3) LOCAL ANALYSIS

HEC-HMS Local Analysis – Results Junctions J-N5, J-S26, & J-MG1

Shed and Routing Parameters (Junctions J-N5 & J-MG1)

Areas 1 -3 Tables and Exhibits (from individual Technical Drainage Analysis, Areas 1-3)

Golden Valley Ranch Technical Drainage Study



Golden Valley Ranch Technical Drainage Study

Project: J-JN5 100yr-6hr
Description: Basin: JN-5 & Met: J-JN5 100yr-6hr & Control: Control 1

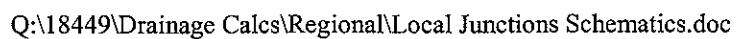
| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|-----------------------|----------------------|------------------|----------------|
| GC-1 | 0.0262 | 24.7 | 01Jan3000, 05:11 | 0.92 |
| GC-2 | 0.0293 | 26.12 | 01Jan3000, 05:12 | 1.03 |
| GC-3 | 0.0144 | 13.18 | 01Jan3000, 05:11 | 0.51 |
| GC-4 | 0.0072 | 6.79 | 01Jan3000, 05:11 | 0.25 |
| GC-5 | 0.0262 | 24.69 | 01Jan3000, 05:11 | 0.92 |
| J-H | 0.1147 | 228.14 | 01Jan3000, 05:13 | 10.53 |
| J-N-17 | 0.2034 | 353.82 | 01Jan3000, 05:18 | 19.79 |
| J-N10 | 0.005 | 11.63 | 01Jan3000, 05:12 | 0.55 |
| J-N11 | 0.022 | 47.59 | 01Jan3000, 05:14 | 2.41 |
| J-N12 | 0.039 | 86.55 | 01Jan3000, 05:13 | 4.27 |
| J-N13 | 0.051 | 112.13 | 01Jan3000, 05:14 | 5.58 |
| J-N14 | 0.061 | 131.51 | 01Jan3000, 05:14 | 6.68 |
| J-N15 | 0.071 | 152.77 | 01Jan3000, 05:14 | 7.77 |
| J-N18 | 0.011 | 24.44 | 01Jan3000, 05:13 | 1.2 |
| J-N19 | 0.012 | 26.37 | 01Jan3000, 05:16 | 1.31 |
| J-N20 | 0.018 | 38.47 | 01Jan3000, 05:13 | 1.97 |
| J-N21 | 0.028 | 63.46 | 01Jan3000, 05:14 | 3.07 |
| J-N22 | 0.039 | 88.19 | 01Jan3000, 05:12 | 4.27 |
| J-N23 | 0.058 | 130.42 | 01Jan3000, 05:14 | 6.36 |
| J-N24 | 0.068 | 132.42 | 01Jan3000, 05:16 | 7.45 |
| J-N26 | 0.013 | 30.12 | 01Jan3000, 05:12 | 1.42 |
| J-N30 | 0.021 | 44.18 | 01Jan3000, 05:17 | 2.3 |
| J-N31 | 0.0452 | 102.41 | 01Jan3000, 05:12 | 4.95 |
| J-N32 | 0.0514 | 116.09 | 01Jan3000, 05:12 | 5.63 |
| J-N6 | 0.026 | 48.94 | 01Jan3000, 05:13 | 2.85 |
| J-N7 | 0.041 | 80.28 | 01Jan3000, 05:15 | 4.49 |
| J-N8 | 0.05 | 97.23 | 01Jan3000, 05:18 | 5.47 |
| J-S17 | 0.016 | 34.48 | 01Jan3000, 05:13 | 1.75 |
| J-S18 | 0.031 | 67.69 | 01Jan3000, 05:13 | 3.39 |
| J-S19 | 0.058 | 123.72 | 01Jan3000, 05:15 | 6.35 |
| J-S20 | 0.078 | 162.46 | 01Jan3000, 05:17 | 8.54 |
| J-S21 | 0.013 | 31.27 | 01Jan3000, 05:12 | 1.42 |
| JN-1 | 0.0543 | 39.44 | 01Jan3000, 05:13 | 3.5 |
| JN-16 | 0.1752 | 332.96 | 01Jan3000, 05:15 | 17.24 |
| JN-2 | 0.169 | 267.59 | 01Jan3000, 05:13 | 14.03 |
| JN-25 | 0.2663 | 316.3 | 01Jan3000, 05:22 | 22.5 |
| JN-3 | 0.1983 | 242.7 | 01Jan3000, 05:18 | 15.06 |
| JN-5 | 0.5421 | 729.05 | 01Jan3000, 05:21 | 49.16 |
| P2-58 | 0.009 | 18.87 | 01Jan3000, 05:14 | 0.98 |
| P2-59 | 0.009 | 17.48 | 01Jan3000, 05:16 | 0.98 |
| P2-60 | 0.011 | 23.29 | 01Jan3000, 05:14 | 1.2 |
| P2-61 | 0.006 | 11.43 | 01Jan3000, 05:17 | 0.66 |
| P2-62 | 0.012 | 23.76 | 01Jan3000, 05:15 | 1.31 |
| P2-63 | 0.006 | 12.98 | 01Jan3000, 05:13 | 0.66 |
| P2-64 | 0.013 | 28.69 | 01Jan3000, 05:12 | 1.42 |
| P2-65 | 0.002 | 5.31 | 01Jan3000, 05:08 | 0.22 |
| P2-66 | 0.014 | 26.67 | 01Jan3000, 05:17 | 1.53 |

**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|-----------------------|----------------------|------------------|----------------|
| P2-68 | 0.0066 | 14.56 | 01Jan3000, 05:12 | 0.72 |
| P2-69 | 0.009 | 18.62 | 01Jan3000, 05:14 | 0.98 |
| P2-70 | 0.02 | 43.84 | 01Jan3000, 05:13 | 2.19 |
| P2-71 | 0.007 | 16.11 | 01Jan3000, 05:11 | 0.77 |
| P2-72 | 0.01 | 19.73 | 01Jan3000, 05:16 | 1.09 |
| P2-73 | 0.01 | 21.85 | 01Jan3000, 05:13 | 1.09 |
| P2-74 | 0.009 | 20.3 | 01Jan3000, 05:12 | 0.98 |
| P2-75 | 0.006 | 14.93 | 01Jan3000, 05:10 | 0.66 |
| P2-76 | 0.011 | 23.14 | 01Jan3000, 05:14 | 1.2 |
| P2-77 | 0.005 | 11.69 | 01Jan3000, 05:11 | 0.55 |
| P2-78 | 0.008 | 20.44 | 01Jan3000, 05:09 | 0.88 |
| P2-79 | 0.006 | 15.28 | 01Jan3000, 05:09 | 0.66 |
| P2-80 | 0.003 | 7.23 | 01Jan3000, 05:10 | 0.33 |
| P2-81 | 0.017 | 36.52 | 01Jan3000, 05:13 | 1.86 |
| P2-82 | 0.008 | 19.36 | 01Jan3000, 05:10 | 0.88 |
| P2-83 | 0.012 | 25.68 | 01Jan3000, 05:13 | 1.31 |
| P2-84 | 0.009 | 21.39 | 01Jan3000, 05:11 | 0.98 |
| P2-85 | 0.005 | 12.01 | 01Jan3000, 05:10 | 0.55 |
| P2-86 | 0.002 | 4.88 | 01Jan3000, 05:10 | 0.22 |
| P2-87 | 0.009 | 19.86 | 01Jan3000, 05:12 | 0.98 |
| P2-88 | 0.001 | 2.03 | 01Jan3000, 05:15 | 0.11 |
| P2-89 | 0.011 | 28.11 | 01Jan3000, 05:09 | 1.2 |
| P2-90 | 0.007 | 17.25 | 01Jan3000, 05:10 | 0.77 |
| P2-91 | 0.002 | 4.71 | 01Jan3000, 05:11 | 0.22 |
| P2-92 | 0.008 | 18.49 | 01Jan3000, 05:11 | 0.88 |
| P2-93 | 0.0062 | 14.49 | 01Jan3000, 05:11 | 0.68 |
| P2-94 | 0.0062 | 15.96 | 01Jan3000, 05:09 | 0.68 |
| P3-44 | 0.0281 | 49.08 | 01Jan3000, 05:15 | 2.58 |
| Pod 61 | 0.0709 | 141.08 | 01Jan3000, 05:12 | 6.51 |
| Pod 62 | 0.0438 | 88.9 | 01Jan3000, 05:11 | 4.02 |
| R-JN-16 | 0.1752 | 306.73 | 01Jan3000, 05:20 | 17.24 |
| R-JN-17 | 0.2034 | 312.99 | 01Jan3000, 05:24 | 19.79 |
| R-JN-2 | 0.169 | 223.54 | 01Jan3000, 05:19 | 14.03 |
| R-JN-3 | 0.1983 | 204.71 | 01Jan3000, 05:26 | 15.06 |
| R-JN10 | 0.005 | 11.6 | 01Jan3000, 05:16 | 0.55 |
| R-JN11 | 0.022 | 47.51 | 01Jan3000, 05:15 | 2.41 |
| R-JN12 | 0.039 | 86.51 | 01Jan3000, 05:14 | 4.27 |
| R-JN13 | 0.051 | 111.95 | 01Jan3000, 05:14 | 5.58 |
| R-JN14 | 0.061 | 131.37 | 01Jan3000, 05:15 | 6.68 |
| R-JN18 | 0.011 | 24.35 | 01Jan3000, 05:16 | 1.21 |
| R-JN19 | 0.012 | 26.32 | 01Jan3000, 05:18 | 1.32 |
| R-JN21 | 0.028 | 63.44 | 01Jan3000, 05:14 | 3.07 |
| R-JN22 | 0.039 | 88.01 | 01Jan3000, 05:12 | 4.27 |
| R-JN26 | 0.013 | 30.1 | 01Jan3000, 05:14 | 1.43 |
| R-JN31 | 0.0452 | 102.25 | 01Jan3000, 05:13 | 4.95 |
| R-JN32 | 0.0514 | 116.04 | 01Jan3000, 05:14 | 5.63 |
| R-JN6 | 0.026 | 48.83 | 01Jan3000, 05:15 | 2.85 |
| R-JN7 | 0.041 | 80 | 01Jan3000, 05:18 | 4.49 |
| R-JN8 | 0.05 | 97.22 | 01Jan3000, 05:18 | 5.48 |

**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|-----------------------|----------------------|------------------|----------------|
| R-JS17 | 0.016 | 34.45 | 01Jan3000, 05:15 | 1.75 |
| R-JS18 | 0.031 | 67.46 | 01Jan3000, 05:16 | 3.4 |
| R-JS19 | 0.058 | 123.41 | 01Jan3000, 05:18 | 6.36 |
| R-JS21 | 0.013 | 31.22 | 01Jan3000, 05:13 | 1.42 |
| R-P260 | 0.011 | 23.24 | 01Jan3000, 05:16 | 1.21 |
| R-P261 | 0.006 | 11.42 | 01Jan3000, 05:22 | 0.66 |
| R-P265 | 0.002 | 5.24 | 01Jan3000, 05:16 | 0.22 |
| R-P279 | 0.006 | 15.22 | 01Jan3000, 05:13 | 0.66 |
| R-P282 | 0.008 | 19.28 | 01Jan3000, 05:13 | 0.88 |
| R-P285 | 0.005 | 11.99 | 01Jan3000, 05:14 | 0.55 |
| R-P286 | 0.002 | 4.84 | 01Jan3000, 05:16 | 0.22 |
| R-P291 | 0.002 | 4.69 | 01Jan3000, 05:14 | 0.22 |
| R-P3-44 | 0.0281 | 28.22 | 01Jan3000, 05:29 | 2.58 |
| R-pod62 | 0.0709 | 140.67 | 01Jan3000, 05:13 | 6.51 |



Golden Valley Ranch Technical Drainage Study

Project: J-S26

Description: Basin: J-S26 & Met: J-S26 & Control: Control 1

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| CG-7 | 0.0167 | 26 | 01Jan3000, 05:10 | 1.04 |
| GC-6 | 0.0304 | 37.99 | 01Jan3000, 05:15 | 1.88 |
| GC-8 | 0.0924 | 109.37 | 01Jan3000, 05:15 | 5.73 |
| GC-9 | 0.0417 | 48.87 | 01Jan3000, 05:15 | 2.58 |
| J-C1 | 0.026 | 51.62 | 01Jan3000, 05:15 | 2.83 |
| J-C10 | 0.026 | 49.7 | 01Jan3000, 05:15 | 2.83 |
| J-C11 | 0.008 | 16.27 | 01Jan3000, 05:10 | 0.87 |
| J-C12 | 0.012 | 23.65 | 01Jan3000, 05:15 | 1.31 |
| J-C13 | 0.016 | 31.51 | 01Jan3000, 05:15 | 1.74 |
| J-C14 | 0.02 | 39.37 | 01Jan3000, 05:15 | 2.18 |
| J-C15 | 0.021 | 40.04 | 01Jan3000, 05:15 | 2.28 |
| J-C16 | 0.044 | 83.87 | 01Jan3000, 05:15 | 4.78 |
| J-C17 | 0.056 | 106.95 | 01Jan3000, 05:15 | 6.09 |
| J-C18 | 0.012 | 23.17 | 01Jan3000, 05:15 | 1.3 |
| J-C19 | 0.019 | 37.85 | 01Jan3000, 05:15 | 2.07 |
| J-C2 | 0.033 | 64.25 | 01Jan3000, 05:15 | 3.59 |
| J-C20 | 0.023 | 45.78 | 01Jan3000, 05:15 | 2.5 |
| J-C21 | 0.026 | 50.62 | 01Jan3000, 05:15 | 2.83 |
| J-C22 | 0.01 | 22.21 | 01Jan3000, 05:10 | 1.09 |
| J-C23 | 0.015 | 31.29 | 01Jan3000, 05:15 | 1.63 |
| J-C24 | 0.018 | 35.48 | 01Jan3000, 05:15 | 1.96 |
| J-C25 | 0.036 | 65.54 | 01Jan3000, 05:15 | 3.92 |
| J-C26 | 0.138 | 253.04 | 01Jan3000, 05:20 | 15.01 |
| J-C27 | 0.012 | 25.96 | 01Jan3000, 05:10 | 1.3 |
| J-C3 | 0.062 | 121.94 | 01Jan3000, 05:15 | 6.74 |
| J-C4 | 0.069 | 135.85 | 01Jan3000, 05:15 | 7.51 |
| J-C5 | 0.095 | 185.43 | 01Jan3000, 05:15 | 10.33 |
| J-C6 | 0.103 | 200.05 | 01Jan3000, 05:15 | 11.2 |
| J-C7 | 0.117 | 222.83 | 01Jan3000, 05:15 | 12.72 |
| J-C8 | 0.131 | 243.31 | 01Jan3000, 05:15 | 14.25 |
| J-C9 | 0.006 | 14.13 | 01Jan3000, 05:10 | 0.65 |
| J-K | 0.02 | 39.37 | 01Jan3000, 05:15 | 2.18 |
| J-L | 0.158 | 290.61 | 01Jan3000, 05:15 | 17.19 |
| J-M | 0.214 | 392.38 | 01Jan3000, 05:15 | 23.3 |
| J-N | 0.24 | 436.84 | 01Jan3000, 05:15 | 26.16 |
| J-S10 | 0.5167 | 458.82 | 01Jan3000, 05:30 | 47.27 |
| J-S22 | 0.7065 | 488.15 | 01Jan3000, 05:30 | 61.47 |
| J-S26 | 0.9465 | 798.57 | 01Jan3000, 05:20 | 87.65 |
| J-S5 | 0.1092 | 183.64 | 01Jan3000, 05:15 | 10.1 |
| J-S6 | 0.3836 | 503.78 | 01Jan3000, 05:20 | 33.03 |
| J-S7 | 0.464 | 482.8 | 01Jan3000, 05:25 | 41.29 |
| J-S8 | 0.6288 | 468.63 | 01Jan3000, 05:25 | 54.96 |
| J-S9 | 0.6705 | 459.2 | 01Jan3000, 05:40 | 57.54 |
| P1-100 | 0.005 | 10.12 | 01Jan3000, 05:10 | 0.54 |
| P1-101 | 0.007 | 13.5 | 01Jan3000, 05:15 | 0.76 |
| P1-102 | 0.003 | 6.36 | 01Jan3000, 05:10 | 0.33 |
| P1-103 | 0.003 | 6.27 | 01Jan3000, 05:10 | 0.33 |
| P1-105 | 0.007 | 13.6 | 01Jan3000, 05:15 | 0.76 |

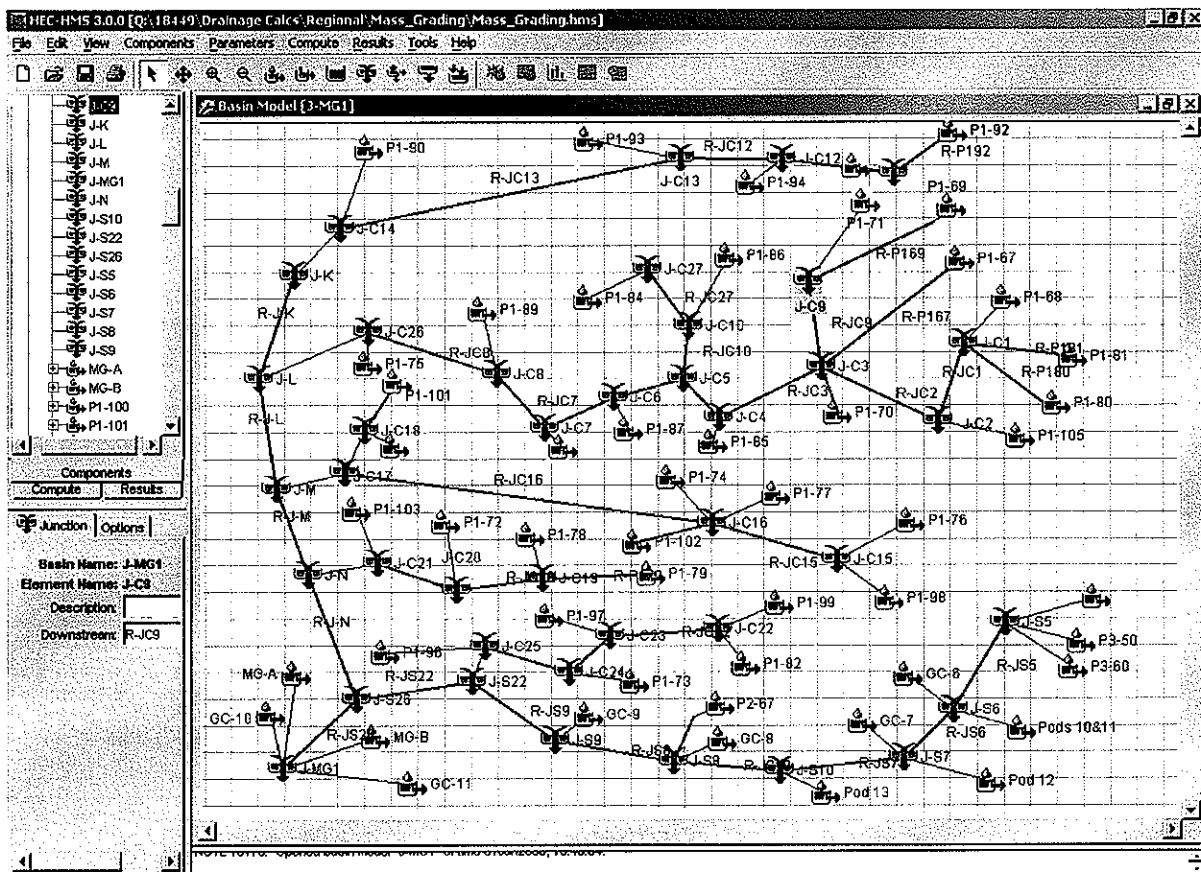
**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| P1-67 | 0.011 | 22.5 | 01Jan3000, 05:10 | 1.2 |
| P1-68 | 0.008 | 15.16 | 01Jan3000, 05:15 | 0.87 |
| P1-69 | 0.002 | 4.73 | 01Jan3000, 05:10 | 0.22 |
| P1-70 | 0.012 | 23.85 | 01Jan3000, 05:15 | 1.3 |
| P1-71 | 0.004 | 9.56 | 01Jan3000, 05:10 | 0.43 |
| P1-72 | 0.004 | 8.27 | 01Jan3000, 05:10 | 0.43 |
| P1-73 | 0.003 | 6.99 | 01Jan3000, 05:10 | 0.33 |
| P1-74 | 0.011 | 23.33 | 01Jan3000, 05:10 | 1.2 |
| P1-75 | 0.007 | 15.35 | 01Jan3000, 05:10 | 0.76 |
| P1-76 | 0.009 | 17.53 | 01Jan3000, 05:15 | 0.98 |
| P1-77 | 0.009 | 21.08 | 01Jan3000, 05:10 | 0.98 |
| P1-78 | 0.009 | 17.73 | 01Jan3000, 05:15 | 0.98 |
| P1-79 | 0.01 | 21.1 | 01Jan3000, 05:10 | 1.09 |
| P1-80 | 0.016 | 31.82 | 01Jan3000, 05:15 | 1.74 |
| P1-81 | 0.002 | 4.94 | 01Jan3000, 05:05 | 0.22 |
| P1-82 | 0.008 | 17.9 | 01Jan3000, 05:10 | 0.87 |
| P1-84 | 0.012 | 25.96 | 01Jan3000, 05:10 | 1.3 |
| P1-85 | 0.007 | 15.96 | 01Jan3000, 05:10 | 0.76 |
| P1-86 | 0.014 | 24.25 | 01Jan3000, 05:15 | 1.52 |
| P1-87 | 0.008 | 14.4 | 01Jan3000, 05:15 | 0.87 |
| P1-88 | 0.014 | 26 | 01Jan3000, 05:15 | 1.52 |
| P1-89 | 0.014 | 22.49 | 01Jan3000, 05:20 | 1.52 |
| P1-90 | 0.004 | 8.65 | 01Jan3000, 05:10 | 0.43 |
| P1-92 | 0.004 | 8.31 | 01Jan3000, 05:10 | 0.43 |
| P1-93 | 0.004 | 8.44 | 01Jan3000, 05:10 | 0.43 |
| P1-94 | 0.004 | 7.55 | 01Jan3000, 05:15 | 0.43 |
| P1-95 | 0.004 | 8.36 | 01Jan3000, 05:10 | 0.43 |
| P1-96 | 0.018 | 31.18 | 01Jan3000, 05:15 | 1.96 |
| P1-97 | 0.005 | 9.32 | 01Jan3000, 05:15 | 0.54 |
| P1-98 | 0.012 | 22.51 | 01Jan3000, 05:15 | 1.3 |
| P1-99 | 0.002 | 4.31 | 01Jan3000, 05:10 | 0.22 |
| P2-67 | 0.0197 | 41.05 | 01Jan3000, 05:10 | 1.96 |
| P3-43 | 0.0393 | 59.06 | 01Jan3000, 05:10 | 2.83 |
| P3-50 | 0.0303 | 57.55 | 01Jan3000, 05:15 | 3.15 |
| P3-60 | 0.0396 | 69.51 | 01Jan3000, 05:15 | 4.12 |
| Pod 12 | 0.0637 | 155.35 | 01Jan3000, 05:10 | 7.23 |
| Pod 13 | 0.0527 | 161.78 | 01Jan3000, 05:05 | 5.98 |
| Pods 10&11 | 0.244 | 346.73 | 01Jan3000, 05:20 | 21.04 |
| R-C-11 | 0.008 | 16.1 | 01Jan3000, 05:15 | 0.87 |
| R-J-K | 0.02 | 39.26 | 01Jan3000, 05:15 | 2.18 |
| R-J-L | 0.158 | 287.9 | 01Jan3000, 05:20 | 17.21 |
| R-J-M | 0.214 | 386.22 | 01Jan3000, 05:15 | 23.33 |
| R-J-N | 0.24 | 431.8 | 01Jan3000, 05:15 | 26.18 |
| R-JC1 | 0.026 | 50.65 | 01Jan3000, 05:15 | 2.83 |
| R-JC10 | 0.026 | 49.56 | 01Jan3000, 05:15 | 2.83 |
| R-JC12 | 0.012 | 23.52 | 01Jan3000, 05:15 | 1.31 |
| R-JC13 | 0.016 | 31.4 | 01Jan3000, 05:15 | 1.75 |
| R-JC15 | 0.021 | 38.68 | 01Jan3000, 05:15 | 2.28 |
| R-JC16 | 0.044 | 83.78 | 01Jan3000, 05:15 | 4.79 |
| R-JC19 | 0.019 | 37.79 | 01Jan3000, 05:15 | 2.07 |

**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| R-JC2 | 0.033 | 64.13 | 01Jan3000, 05:15 | 3.59 |
| R-JC20 | 0.023 | 44.63 | 01Jan3000, 05:15 | 2.5 |
| R-JC22 | 0.01 | 21.97 | 01Jan3000, 05:15 | 1.09 |
| R-JC23 | 0.015 | 29.74 | 01Jan3000, 05:15 | 1.64 |
| R-JC24 | 0.018 | 34.36 | 01Jan3000, 05:15 | 1.97 |
| R-JC27 | 0.012 | 25.45 | 01Jan3000, 05:15 | 1.31 |
| R-JC3 | 0.062 | 122.14 | 01Jan3000, 05:15 | 6.74 |
| R-JC4 | 0.069 | 135.87 | 01Jan3000, 05:15 | 7.51 |
| R-JC5 | 0.095 | 185.66 | 01Jan3000, 05:15 | 10.33 |
| R-JC6 | 0.103 | 196.83 | 01Jan3000, 05:15 | 11.2 |
| R-JC7 | 0.117 | 222.14 | 01Jan3000, 05:15 | 12.72 |
| R-JC8 | 0.131 | 242.41 | 01Jan3000, 05:20 | 14.25 |
| R-JC9 | 0.006 | 13.98 | 01Jan3000, 05:10 | 0.65 |
| R-JS10 | 0.5167 | 420.38 | 01Jan3000, 05:40 | 47.27 |
| R-JS22 | 0.7065 | 465.63 | 01Jan3000, 05:50 | 61.47 |
| R-JS5 | 0.1092 | 130.58 | 01Jan3000, 05:25 | 10.1 |
| R-JS6 | 0.3836 | 422.37 | 01Jan3000, 05:30 | 33.03 |
| R-JS7 | 0.464 | 449.1 | 01Jan3000, 05:30 | 41.29 |
| R-JS8 | 0.6288 | 446.96 | 01Jan3000, 05:45 | 54.96 |
| R-JS9 | 0.6705 | 458.56 | 01Jan3000, 05:45 | 57.54 |
| R-P167 | 0.011 | 22.23 | 01Jan3000, 05:15 | 1.19 |
| R-P169 | 0.002 | 4.58 | 01Jan3000, 05:10 | 0.22 |
| R-P170 | 0.012 | 23.84 | 01Jan3000, 05:15 | 1.3 |
| R-P179 | 0.01 | 20.56 | 01Jan3000, 05:10 | 1.09 |
| R-P180 | 0.016 | 31.76 | 01Jan3000, 05:15 | 1.74 |
| R-P181 | 0.002 | 4.91 | 01Jan3000, 05:10 | 0.22 |
| R-P192 | 0.004 | 8.07 | 01Jan3000, 05:15 | 0.44 |
| R-P2-67 | 0.0197 | 39.16 | 01Jan3000, 05:15 | 1.96 |
| RP1101 | 0.007 | 13.2 | 01Jan3000, 05:15 | 0.76 |
| RP1102 | 0.003 | 6.15 | 01Jan3000, 05:15 | 0.33 |
| R-P2-67 | 0.0197 | 39.15 | 01Jan3000, 05:15 | 1.96 |
| RP1101 | 0.007 | 13.2 | 01Jan3000, 05:15 | 0.76 |
| RP1102 | 0.003 | 6.15 | 01Jan3000, 05:15 | 0.33 |

Golden Valley Ranch Technical Drainage Study



Golden Valley Ranch Technical Drainage Study

Project: J-MG1 100yr-6hr
Description: Basin: J-MG1 & Met: J-MG1 100yr-6hr & Control: Control 1

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| GC-10 | 0.054 | 32.47 | 01Jan3000, 05:15 | 1.62 |
| GC-11 | 0.134 | 50.2 | 01Jan3000, 05:30 | 4.01 |
| GC-6 | 0.0304 | 18.51 | 01Jan3000, 05:15 | 0.91 |
| GC-7 | 0.0167 | 13.38 | 01Jan3000, 05:10 | 0.5 |
| GC-8 | 0.0924 | 50.99 | 01Jan3000, 05:15 | 2.77 |
| GC-9 | 0.0417 | 22.67 | 01Jan3000, 05:15 | 1.25 |
| J-C1 | 0.026 | 51.36 | 01Jan3000, 05:15 | 2.81 |
| J-C10 | 0.026 | 49.44 | 01Jan3000, 05:15 | 2.81 |
| J-C11 | 0.008 | 16.18 | 01Jan3000, 05:10 | 0.87 |
| J-C12 | 0.012 | 23.53 | 01Jan3000, 05:15 | 1.3 |
| J-C13 | 0.016 | 31.34 | 01Jan3000, 05:15 | 1.73 |
| J-C14 | 0.02 | 39.16 | 01Jan3000, 05:15 | 2.17 |
| J-C15 | 0.021 | 39.83 | 01Jan3000, 05:15 | 2.27 |
| J-C16 | 0.044 | 83.44 | 01Jan3000, 05:15 | 4.75 |
| J-C17 | 0.056 | 106.39 | 01Jan3000, 05:15 | 6.06 |
| J-C18 | 0.012 | 23.05 | 01Jan3000, 05:15 | 1.3 |
| J-C19 | 0.019 | 37.66 | 01Jan3000, 05:15 | 2.06 |
| J-C2 | 0.033 | 63.93 | 01Jan3000, 05:15 | 3.57 |
| J-C20 | 0.023 | 45.54 | 01Jan3000, 05:15 | 2.49 |
| J-C21 | 0.026 | 50.36 | 01Jan3000, 05:15 | 2.81 |
| J-C22 | 0.01 | 22.1 | 01Jan3000, 05:10 | 1.08 |
| J-C23 | 0.015 | 31.09 | 01Jan3000, 05:15 | 1.63 |
| J-C24 | 0.018 | 35.29 | 01Jan3000, 05:15 | 1.95 |
| J-C25 | 0.036 | 65.18 | 01Jan3000, 05:15 | 3.9 |
| J-C26 | 0.138 | 251.82 | 01Jan3000, 05:20 | 14.92 |
| J-C27 | 0.012 | 25.82 | 01Jan3000, 05:10 | 1.3 |
| J-C3 | 0.062 | 121.33 | 01Jan3000, 05:15 | 6.71 |
| J-C4 | 0.069 | 135.19 | 01Jan3000, 05:15 | 7.46 |
| J-C5 | 0.095 | 184.53 | 01Jan3000, 05:15 | 10.28 |
| J-C6 | 0.103 | 199.08 | 01Jan3000, 05:15 | 11.14 |
| J-C7 | 0.117 | 221.74 | 01Jan3000, 05:15 | 12.65 |
| J-C8 | 0.131 | 242.04 | 01Jan3000, 05:15 | 14.17 |
| J-C9 | 0.006 | 14.06 | 01Jan3000, 05:10 | 0.65 |
| J-K | 0.02 | 39.16 | 01Jan3000, 05:15 | 2.17 |
| J-L | 0.158 | 289 | 01Jan3000, 05:15 | 17.09 |
| J-M | 0.214 | 390.22 | 01Jan3000, 05:15 | 23.18 |
| J-MG1 | 1.4525 | 995.1 | 01Jan3000, 05:30 | 104.63 |
| J-N | 0.24 | 434.44 | 01Jan3000, 05:15 | 26.02 |
| J-S10 | 0.5167 | 432.75 | 01Jan3000, 05:35 | 45.5 |
| J-S22 | 0.7065 | 430.66 | 01Jan3000, 05:30 | 55.36 |
| J-S26 | 0.9465 | 747.62 | 01Jan3000, 05:20 | 81.4 |
| J-S5 | 0.1092 | 182.59 | 01Jan3000, 05:15 | 10.04 |
| J-S6 | 0.3836 | 485.67 | 01Jan3000, 05:20 | 31.86 |
| J-S7 | 0.464 | 459.01 | 01Jan3000, 05:25 | 39.55 |
| J-S8 | 0.6288 | 426.91 | 01Jan3000, 05:35 | 50.21 |
| J-S9 | 0.6705 | 412.91 | 01Jan3000, 05:45 | 51.46 |
| MG-A | 0.131 | 87.02 | 01Jan3000, 05:30 | 7.25 |
| MG-B | 0.187 | 124.36 | 01Jan3000, 05:30 | 10.35 |

**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| P1-100 | 0.005 | 10.07 | 01Jan3000, 05:10 | 0.54 |
| P1-101 | 0.007 | 13.43 | 01Jan3000, 05:15 | 0.76 |
| P1-102 | 0.003 | 6.33 | 01Jan3000, 05:10 | 0.32 |
| P1-103 | 0.003 | 6.23 | 01Jan3000, 05:10 | 0.32 |
| P1-105 | 0.007 | 13.53 | 01Jan3000, 05:15 | 0.76 |
| P1-67 | 0.011 | 22.39 | 01Jan3000, 05:10 | 1.19 |
| P1-68 | 0.008 | 15.08 | 01Jan3000, 05:15 | 0.86 |
| P1-69 | 0.002 | 4.71 | 01Jan3000, 05:10 | 0.22 |
| P1-70 | 0.012 | 23.73 | 01Jan3000, 05:15 | 1.3 |
| P1-71 | 0.004 | 9.51 | 01Jan3000, 05:10 | 0.43 |
| P1-72 | 0.004 | 8.23 | 01Jan3000, 05:10 | 0.43 |
| P1-73 | 0.003 | 6.95 | 01Jan3000, 05:10 | 0.32 |
| P1-74 | 0.011 | 23.2 | 01Jan3000, 05:10 | 1.19 |
| P1-75 | 0.007 | 15.27 | 01Jan3000, 05:10 | 0.76 |
| P1-76 | 0.009 | 17.44 | 01Jan3000, 05:15 | 0.97 |
| P1-77 | 0.009 | 20.98 | 01Jan3000, 05:10 | 0.97 |
| P1-78 | 0.009 | 17.64 | 01Jan3000, 05:15 | 0.97 |
| P1-79 | 0.01 | 20.99 | 01Jan3000, 05:10 | 1.08 |
| P1-80 | 0.016 | 31.66 | 01Jan3000, 05:15 | 1.73 |
| P1-81 | 0.002 | 4.92 | 01Jan3000, 05:05 | 0.22 |
| P1-82 | 0.008 | 17.81 | 01Jan3000, 05:10 | 0.86 |
| P1-84 | 0.012 | 25.82 | 01Jan3000, 05:10 | 1.3 |
| P1-85 | 0.007 | 15.88 | 01Jan3000, 05:10 | 0.76 |
| P1-86 | 0.014 | 24.12 | 01Jan3000, 05:15 | 1.51 |
| P1-87 | 0.008 | 14.32 | 01Jan3000, 05:15 | 0.86 |
| P1-88 | 0.014 | 25.86 | 01Jan3000, 05:15 | 1.51 |
| P1-89 | 0.014 | 22.37 | 01Jan3000, 05:20 | 1.51 |
| P1-90 | 0.004 | 8.61 | 01Jan3000, 05:10 | 0.43 |
| P1-92 | 0.004 | 8.27 | 01Jan3000, 05:10 | 0.43 |
| P1-93 | 0.004 | 8.4 | 01Jan3000, 05:10 | 0.43 |
| P1-94 | 0.004 | 7.52 | 01Jan3000, 05:15 | 0.43 |
| P1-95 | 0.004 | 8.31 | 01Jan3000, 05:10 | 0.43 |
| P1-96 | 0.018 | 31.01 | 01Jan3000, 05:15 | 1.95 |
| P1-97 | 0.005 | 9.27 | 01Jan3000, 05:15 | 0.54 |
| P1-98 | 0.012 | 22.4 | 01Jan3000, 05:15 | 1.3 |
| P1-99 | 0.002 | 4.28 | 01Jan3000, 05:10 | 0.22 |
| P2-67 | 0.0197 | 40.83 | 01Jan3000, 05:10 | 1.95 |
| P3-43 | 0.0393 | 58.66 | 01Jan3000, 05:10 | 2.81 |
| P3-50 | 0.0303 | 57.25 | 01Jan3000, 05:15 | 3.14 |
| P3-60 | 0.0396 | 69.14 | 01Jan3000, 05:15 | 4.1 |
| Pod 12 | 0.0637 | 154.59 | 01Jan3000, 05:10 | 7.19 |
| Pod 13 | 0.0527 | 161.01 | 01Jan3000, 05:05 | 5.95 |
| Pods 10&11 | 0.244 | 344.64 | 01Jan3000, 05:20 | 20.91 |
| R-C-11 | 0.008 | 16.01 | 01Jan3000, 05:15 | 0.87 |
| R-J-K | 0.02 | 39.06 | 01Jan3000, 05:15 | 2.17 |
| R-J-L | 0.158 | 286.49 | 01Jan3000, 05:20 | 17.12 |
| R-J-M | 0.214 | 384.07 | 01Jan3000, 05:15 | 23.2 |
| R-J-N | 0.24 | 429.49 | 01Jan3000, 05:15 | 26.04 |
| R-JC1 | 0.026 | 50.4 | 01Jan3000, 05:15 | 2.81 |
| R-JC10 | 0.026 | 49.31 | 01Jan3000, 05:15 | 2.81 |

**Golden Valley Ranch
Technical Drainage Study**

| Hydrologic Element | Drainage Area (sq mi) | Peak Discharge (cfs) | Time of Peak | Volume (ac-ft) |
|--------------------|--------------------------|-------------------------|------------------|----------------|
| R-JC12 | 0.012 | 23.4 | 01Jan3000, 05:15 | 1.3 |
| R-JC13 | 0.016 | 31.23 | 01Jan3000, 05:15 | 1.74 |
| R-JC15 | 0.021 | 38.47 | 01Jan3000, 05:15 | 2.27 |
| R-JC16 | 0.044 | 83.34 | 01Jan3000, 05:15 | 4.76 |
| R-JC19 | 0.019 | 37.6 | 01Jan3000, 05:15 | 2.06 |
| R-JC2 | 0.033 | 63.8 | 01Jan3000, 05:15 | 3.57 |
| R-JC20 | 0.023 | 44.41 | 01Jan3000, 05:15 | 2.49 |
| R-JC22 | 0.01 | 21.82 | 01Jan3000, 05:15 | 1.09 |
| R-JC23 | 0.015 | 29.57 | 01Jan3000, 05:15 | 1.63 |
| R-JC24 | 0.018 | 34.17 | 01Jan3000, 05:15 | 1.96 |
| R-JC27 | 0.012 | 25.32 | 01Jan3000, 05:15 | 1.3 |
| R-JC3 | 0.062 | 121.55 | 01Jan3000, 05:15 | 6.71 |
| R-JC4 | 0.069 | 135.22 | 01Jan3000, 05:15 | 7.46 |
| R-JC5 | 0.095 | 184.76 | 01Jan3000, 05:15 | 10.28 |
| R-JC6 | 0.103 | 195.87 | 01Jan3000, 05:15 | 11.14 |
| R-JC7 | 0.117 | 220.99 | 01Jan3000, 05:15 | 12.65 |
| R-JC8 | 0.131 | 241.25 | 01Jan3000, 05:20 | 14.17 |
| R-JC9 | 0.006 | 13.91 | 01Jan3000, 05:10 | 0.65 |
| R-JS10 | 0.5167 | 398.95 | 01Jan3000, 05:40 | 45.5 |
| R-JS22 | 0.7065 | 419.05 | 01Jan3000, 05:55 | 55.36 |
| R-JS26 | 0.9465 | 726.79 | 01Jan3000, 05:25 | 81.4 |
| R-JS5 | 0.1092 | 129.81 | 01Jan3000, 05:25 | 10.04 |
| R-JS6 | 0.3836 | 405.74 | 01Jan3000, 05:30 | 31.86 |
| R-JS7 | 0.464 | 424.71 | 01Jan3000, 05:35 | 39.55 |
| R-JS8 | 0.6288 | 407.34 | 01Jan3000, 05:50 | 50.21 |
| R-JS9 | 0.6705 | 412.67 | 01Jan3000, 05:50 | 51.46 |
| R-P167 | 0.011 | 22.11 | 01Jan3000, 05:15 | 1.19 |
| R-P169 | 0.002 | 4.55 | 01Jan3000, 05:10 | 0.22 |
| R-P170 | 0.012 | 23.72 | 01Jan3000, 05:15 | 1.3 |
| R-P179 | 0.01 | 20.45 | 01Jan3000, 05:10 | 1.08 |
| R-P180 | 0.016 | 31.59 | 01Jan3000, 05:15 | 1.73 |
| R-P181 | 0.002 | 4.87 | 01Jan3000, 05:10 | 0.22 |
| R-P192 | 0.004 | 8.03 | 01Jan3000, 05:15 | 0.43 |
| R-P2-67 | 0.0197 | 38.95 | 01Jan3000, 05:15 | 1.95 |
| RP1101 | 0.007 | 13.13 | 01Jan3000, 05:15 | 0.76 |
| RP1102 | 0.003 | 6.12 | 01Jan3000, 05:15 | 0.32 |

**Golden Valley Ranch
Technical Drainage Study**

Shed Parameters (SCS Methods)

| Shed | Area (sq mi) | CN | TLag (min) |
|--------|--------------|----|------------|
| GC-1 | 0.0262 | 79 | 9.487 |
| GC-2 | 0.0293 | 79 | 10.545 |
| GC-3 | 0.0144 | 79 | 10.07 |
| GC-4 | 0.0072 | 79 | 9.5 |
| GC-5 | 0.0262 | 79 | 9.5 |
| P2-58 | 0.009 | 91 | 15.3 |
| P2-59 | 0.009 | 91 | 17.6 |
| P2-60 | 0.011 | 91 | 15 |
| P2-61 | 0.006 | 91 | 18.2 |
| P2-62 | 0.012 | 91 | 17 |
| P2-63 | 0.006 | 91 | 14.4 |
| P2-64 | 0.013 | 91 | 13.8 |
| P2-65 | 0.002 | 91 | 8.6 |
| P2-66 | 0.014 | 91 | 18.2 |
| P2-68 | 0.0066 | 91 | 13.8 |
| P2-69 | 0.009 | 91 | 15.7 |
| P2-70 | 0.02 | 91 | 14 |
| P2-71 | 0.007 | 91 | 12.6 |
| P2-72 | 0.01 | 91 | 17.1 |
| P2-73 | 0.01 | 91 | 14.1 |
| P2-74 | 0.009 | 91 | 13.2 |
| P2-75 | 0.006 | 91 | 10.4 |
| P2-76 | 0.011 | 91 | 15.2 |
| P2-77 | 0.005 | 91 | 12.2 |
| P2-78 | 0.008 | 91 | 9.7 |
| P2-79 | 0.006 | 91 | 9.8 |
| P2-80 | 0.003 | 91 | 11.3 |
| P2-81 | 0.017 | 91 | 14.6 |
| P2-82 | 0.008 | 91 | 11.2 |
| P2-83 | 0.012 | 91 | 14.7 |
| P2-84 | 0.009 | 91 | 11.7 |
| P2-85 | 0.005 | 91 | 11.4 |
| P2-86 | 0.002 | 91 | 11 |
| P2-87 | 0.009 | 91 | 13.8 |
| P2-88 | 0.001 | 91 | 16.2 |
| P2-89 | 0.011 | 91 | 9.7 |
| P2-90 | 0.007 | 91 | 10.7 |
| P2-91 | 0.002 | 91 | 12 |
| P2-92 | 0.008 | 91 | 12.5 |
| P2-93 | 0.0062 | 91 | 12.2 |
| P2-94 | 0.0062 | 91 | 9.5 |
| P3-44 | 0.0281 | 87 | 16.4 |
| Pod 61 | 0.0709 | 87 | 12.79 |
| Pod 62 | 0.0438 | 87 | 12.23 |

Golden Valley Ranch Technical Drainage Study

Kinematic Routing

| Reach | Length (ft) | Slope (ft/ft) | Manning | Subreaches | Shape | Bottom (ft) | Sideslope |
|---------|-------------|---------------|---------|------------|-----------|-------------|-----------|
| R-JN10 | 1134 | 0.011 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN11 | 260 | 0.006 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN12 | 270 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN13 | 180 | 0.006 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN14 | 200 | 0.01 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN18 | 1016 | 0.011 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN19 | 490 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN21 | 140 | 0.017 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN22 | 130 | 0.0114 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN26 | 490 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN31 | 480 | 0.0079 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN32 | 640 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN6 | 1084 | 0.011 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN7 | 1590 | 0.009 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JN8 | 137 | 0.014 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JS17 | 725 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JS18 | 1480 | 0.006 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JS19 | 1480 | 0.006 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JS21 | 230 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P260 | 730 | 0.015 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P261 | 1310 | 0.01 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P265 | 1238 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P279 | 811 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P282 | 915 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P285 | 850 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P286 | 900 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P291 | 590 | 0.01 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-pod62 | 1900 | 0.01 | 0.013 | 2 | Circle | 4 | |

Modified Puls Routing

Reach Routing Table

**Golden Valley Ranch
Technical Drainage Study**

Shed Parameters (SCS Methods)

| Shed | Area (sq mi) | CN | TLag (min) |
|------------|--------------|------|------------|
| CG-7 | 0.0167 | 79 | 7.38 |
| GC-6 | 0.0304 | 79 | 13.17 |
| GC-8 | 0.0924 | 79 | 15.37 |
| GC-9 | 0.0417 | 79 | 15.65 |
| MG | 0.34 | 79 | 26 |
| P1-100 | 0.005 | 91 | 13.7 |
| P1-101 | 0.007 | 91 | 15.8 |
| P1-102 | 0.003 | 91 | 12.8 |
| P1-103 | 0.003 | 91 | 13.1 |
| P1-105 | 0.007 | 91 | 15.5 |
| P1-67 | 0.011 | 91 | 13.5 |
| P1-68 | 0.008 | 91 | 16.4 |
| P1-69 | 0.002 | 91 | 9.7 |
| P1-70 | 0.012 | 91 | 14.2 |
| P1-71 | 0.004 | 91 | 9.1 |
| P1-72 | 0.004 | 91 | 13.3 |
| P1-73 | 0.003 | 91 | 10.4 |
| P1-74 | 0.011 | 91 | 12.8 |
| P1-75 | 0.007 | 91 | 12.1 |
| P1-76 | 0.009 | 91 | 15.4 |
| P1-77 | 0.009 | 91 | 10.2 |
| P1-78 | 0.009 | 91 | 14.8 |
| P1-79 | 0.01 | 91 | 12.9 |
| P1-80 | 0.016 | 91 | 14.1 |
| P1-81 | 0.002 | 91 | 7.9 |
| P1-82 | 0.008 | 91 | 11.6 |
| P1-84 | 0.012 | 91 | 12.4 |
| P1-85 | 0.007 | 91 | 11.1 |
| P1-86 | 0.014 | 91 | 18.9 |
| P1-87 | 0.008 | 91 | 17.9 |
| P1-88 | 0.014 | 91 | 17 |
| P1-89 | 0.014 | 91 | 22 |
| P1-90 | 0.004 | 91 | 12.4 |
| P1-92 | 0.004 | 91 | 13.2 |
| P1-93 | 0.004 | 91 | 12.9 |
| P1-94 | 0.004 | 91 | 16.5 |
| P1-95 | 0.004 | 91 | 13.1 |
| P1-96 | 0.018 | 91 | 18.9 |
| P1-97 | 0.005 | 91 | 16.9 |
| P1-98 | 0.012 | 91 | 16.7 |
| P1-99 | 0.002 | 91 | 12.5 |
| P2-67 | 0.0197 | 89 | 11.65 |
| P3-43 | 0.0393 | 82 | 12.38 |
| P3-50 | 0.0303 | 90 | 14.97 |
| P3-60 | 0.0396 | 90 | 17.58 |
| Pod 12 | 0.0637 | 92 | 9.69 |
| Pod 13 | 0.0527 | 92 | 3.45 |
| Pods 10&11 | 0.244 | 85.8 | 18.64 |

Golden Valley Ranch Technical Drainage Study

Kinematic Routing

| Reach | Length (ft) | Slope (ft/ft) | Manning | Subreaches | Shape | Bottom (ft) | Sideslope |
|---------|-------------|---------------|---------|------------|-----------|-------------|-----------|
| R-C-11 | 250 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC1 | 530 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC10 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC12 | 170 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC13 | 150 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC15 | 820 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC16 | 330 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC19 | 830 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC2 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC20 | 680 | 0.0109 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC22 | 1000 | 0.01 | 0.025 | 5 | Trapezoid | 100 | 0 |
| R-JC23 | 550 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC24 | 390 | 0.009 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC27 | 1130 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC9 | 200 | 0.01 | 0.023 | 5 | Trapezoid | 20 | 0.5 |
| R-J-K | 379 | 0.008 | 0.013 | 5 | Rectangle | 8 | |
| R-J-L | 796 | 0.008 | 0.013 | 5 | Rectangle | 8 | |
| R-J-M | 882 | 0.008 | 0.013 | 5 | Rectangle | 8 | |
| R-J-N | 609 | 0.008 | 0.013 | 5 | Rectangle | 8 | |
| RP1101 | 400 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| RP1102 | 380 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P167 | 650 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P169 | 330 | 0.01 | 0.025 | 5 | Trapezoid | 50 | 0.5 |
| R-P170 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-P179 | 200 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P180 | 1140 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P181 | 730 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P192 | 250 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P2-67 | 1000 | 0.0071 | 0.025 | 2 | Trapezoid | 25 | 10 |

Modified Puls Routing

| Reach | Routing Table | | |
|--------|---------------|---|----------------|
| R-JC3 | R-JC3 | 1 | flow = Outflow |
| R-JC4 | R-JC4 | 1 | flow = Outflow |
| R-JC5 | R-JC5 | 1 | flow = Outflow |
| R-JC6 | R-JC6 | 1 | flow = Outflow |
| R-JC7 | R-JC7 | 1 | flow = Outflow |
| R-JC8 | R-JC8 | 1 | flow = Outflow |
| R-JS10 | R-JS10 | 1 | flow = Outflow |
| R-JS22 | R-JS8 | 1 | flow = Outflow |
| R-JS26 | R-JS26 | 1 | flow = Outflow |
| R-JS5 | R-JS5 | 1 | flow = Outflow |
| R-JS6 | R-JS6 | 1 | flow = Outflow |
| R-JS7 | R-JS7 | 1 | flow = Outflow |
| R-JS8 | R-JS8 | 1 | flow = Outflow |
| R-JS9 | R-JS9 | 1 | flow = Outflow |

Golden Valley Ranch Technical Drainage Study

| Golf Course - North Leg | | | | Golf Course - Center Leg | | | | Area 1 - Open Space | | | |
|-------------------------|----------|----------|----------|--------------------------|----------|----------|---------|---------------------|---------|----------|--|
| 0 | R-P3-44 | JN-2 | JN-3 | 0 | R-JS-20 | R-JN-16 | R-JN-17 | 0 | F-JC8 | sta450-0 | |
| Flow | sta51-33 | sta31-17 | sta17-6 | Flow | sta35-25 | sta25-17 | sta17-3 | Flow | | Storage | |
| (cfs) | (ac-ft) | (ac-ft) | (ac-ft) | (cfs) | (ac-ft) | (ac-ft) | (ac-ft) | (cfs) | | (ac-ft) | |
| 25 | 0.960216 | 0.805425 | 0.567149 | 25 | 1.2523 | 0.9435 | 1.8021 | 25 | | 0.08514 | |
| 50 | 1.454075 | 1.205987 | 0.922394 | 50 | 1.5296 | 1.3105 | 2.2576 | 50 | | 0.16326 | |
| 75 | 1.876653 | 1.538718 | 1.197808 | 75 | 1.7502 | 1.6101 | 2.5762 | 75 | | 0.26618 | |
| 100 | 2.231152 | 1.832828 | 1.414463 | 100 | 1.9389 | 1.8765 | 2.9167 | 100 | | 0.40819 | |
| 125 | 2.573829 | 2.10676 | 1.665461 | 125 | 2.1101 | 2.1243 | 3.2477 | 125 | | 0.57128 | |
| 150 | 2.882105 | 2.366766 | 1.938189 | 150 | 2.2697 | 2.3533 | 3.5433 | 150 | | 0.73724 | |
| 175 | 3.275413 | 2.609809 | 2.245282 | 175 | 2.4155 | 2.5692 | 3.8253 | 200 | | 1.16079 | |
| 200 | 3.77764 | 2.843372 | 2.526997 | 200 | 2.5590 | 2.7784 | 4.0807 | 250 | | 1.64304 | |
| 250 | 5.087408 | 3.284176 | 3.090301 | 250 | 2.8300 | 3.1681 | 4.6527 | 300 | | 2.20293 | |
| | | | | | | | | | | | |
| Course - South Leg | | | | R-JS25 | | | | R-JS26 | | | |
| Sta 1 | 0 | R-JS5 | R-JS6 | 0 | 23-16 | 0 | Flow | 0 | 16-7 | Storage | |
| Flow | Volume | Storage | Storage | Flow | (ac-ft) | Flow | (cfs) | Flow | (ac-ft) | | |
| (cfs) | (ac-ft) | (ac-ft) | (ac-ft) | (cfs) | | (cfs) | | (cfs) | | | |
| 100 | 41.3242 | 7.6979 | 5.4793 | 175 | 2.6971 | 175 | 175 | 175 | 2.6334 | | |
| 150 | 43.0420 | 8.6390 | 6.1599 | 225 | 3.1038 | 225 | 225 | 225 | 2.9938 | | |
| 200 | 44.0402 | 9.4459 | 6.7562 | 300 | 3.9253 | 300 | 300 | 350 | 3.7983 | | |
| 250 | 44.7140 | 10.1065 | 7.2902 | 375 | 4.7431 | 375 | 375 | 425 | 4.2393 | | |
| 300 | 43.0517 | 10.7634 | 7.7873 | 450 | 5.5216 | 450 | 450 | 500 | 4.6653 | | |
| 350 | 41.0425 | 11.3875 | 8.2535 | 525 | 6.2579 | 525 | 525 | 575 | 5.0782 | | |
| 400 | 39.6333 | 11.9971 | 8.6939 | 600 | 7.3429 | 600 | 600 | 650 | 5.4798 | | |
| 450 | 35.7743 | 12.5803 | 9.1198 | 675 | 8.0724 | 675 | 675 | 725 | 5.8767 | | |
| 500 | 34.7934 | 13.1282 | 9.5346 | 750 | 8.7823 | 750 | 750 | 800 | 6.8304 | | |
| 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0 | | |

GOLDEN VALLEY RANCH

APPENDIX A

AREA 1 – RESULTS AND DATA

- **HEC-HMS 100-YR, 6-HR SIMULATION**
- **HEC-HMS 10-YR, 6-HR SIMULATION**
- **NOAA ATLAS 14 PRECIPITATION**
- **STANDARD FORM 4**

Project: Pod1_S_curve Simulation Run: Pod1-100yr

Start of Run: 01Jan3000, 01:00 Basin Model: POD 1
 End of Run: 02Jan3000, 01:55 Meteorologic Model: S-Pattern 1(3.00IN)
 Execution Time: 15Mar2006, 11:16:57 Control Specifications: Control 1

Volume Units: AC-FT

| | | | | |
|-------|--------|--------|------------------|-------|
| J-C1 | 0.0268 | 56.80 | 01Jan3000, 05:10 | 2.70 |
| J-C10 | 0.0365 | 76.41 | 01Jan3000, 05:10 | 3.67 |
| J-C11 | 0.0087 | 19.96 | 01Jan3000, 05:10 | 0.88 |
| J-C12 | 0.0131 | 29.74 | 01Jan3000, 05:10 | 1.32 |
| J-C13 | 0.0172 | 38.87 | 01Jan3000, 05:10 | 1.74 |
| J-C14 | 0.0210 | 47.29 | 01Jan3000, 05:10 | 2.13 |
| J-C15 | 0.0213 | 47.74 | 01Jan3000, 05:10 | 2.15 |
| J-C16 | 0.0300 | 65.79 | 01Jan3000, 05:10 | 3.02 |
| J-C17 | 0.0548 | 120.12 | 01Jan3000, 05:10 | 5.53 |
| J-C18 | 0.0112 | 25.05 | 01Jan3000, 05:10 | 1.13 |
| J-C19 | 0.0187 | 41.77 | 01Jan3000, 05:10 | 1.89 |
| J-C2 | 0.0341 | 71.23 | 01Jan3000, 05:10 | 3.44 |
| J-C20 | 0.0231 | 49.86 | 01Jan3000, 05:10 | 2.33 |
| J-C21 | 0.0263 | 54.45 | 01Jan3000, 05:10 | 2.65 |
| J-C22 | 0.0104 | 23.48 | 01Jan3000, 05:10 | 1.05 |
| J-C23 | 0.0154 | 33.04 | 01Jan3000, 05:10 | 1.56 |
| J-C24 | 0.0184 | 37.18 | 01Jan3000, 05:15 | 1.86 |
| J-C25 | 0.0363 | 73.15 | 01Jan3000, 05:10 | 3.67 |
| J-C26 | 0.1378 | 241.70 | 01Jan3000, 05:20 | 13.54 |
| J-C27 | 0.0222 | 49.42 | 01Jan3000, 05:10 | 2.24 |
| J-C3 | 0.0523 | 111.40 | 01Jan3000, 05:10 | 5.28 |
| J-C4 | 0.0589 | 125.94 | 01Jan3000, 05:10 | 5.95 |
| J-C5 | 0.0954 | 202.09 | 01Jan3000, 05:10 | 9.62 |
| J-C6 | 0.1036 | 217.95 | 01Jan3000, 05:10 | 10.45 |
| J-C7 | 0.1173 | 240.25 | 01Jan3000, 05:10 | 11.83 |

| | | | | |
|--------|--------|--------|------------------|-------|
| J-C8 | 0.1311 | 266.40 | 01Jan3000, 05:15 | 13.22 |
| J-C9 | 0.0065 | 14.88 | 01Jan3000, 05:10 | 0.66 |
| P1-100 | 0.0046 | 10.53 | 01Jan3000, 05:10 | 0.46 |
| P1-101 | 0.0066 | 14.88 | 01Jan3000, 05:10 | 0.67 |
| P1-102 | 0.0031 | 7.30 | 01Jan3000, 05:05 | 0.31 |
| P1-103 | 0.0032 | 7.49 | 01Jan3000, 05:05 | 0.32 |
| P1-105 | 0.0073 | 16.51 | 01Jan3000, 05:10 | 0.74 |
| P1-67 | 0.0107 | 24.16 | 01Jan3000, 05:10 | 1.08 |
| P1-68 | 0.0085 | 18.57 | 01Jan3000, 05:10 | 0.86 |
| P1-69 | 0.0021 | 4.86 | 01Jan3000, 05:05 | 0.21 |
| P1-70 | 0.0117 | 25.64 | 01Jan3000, 05:10 | 1.18 |
| P1-71 | 0.0044 | 10.43 | 01Jan3000, 05:05 | 0.44 |
| P1-72 | 0.0044 | 9.97 | 01Jan3000, 05:10 | 0.44 |
| P1-73 | 0.0030 | 6.87 | 01Jan3000, 05:10 | 0.30 |
| P1-74 | 0.0105 | 23.50 | 01Jan3000, 05:10 | 1.06 |
| P1-75 | 0.0067 | 6.54 | 01Jan3000, 05:15 | 0.32 |
| P1-76 | 0.0089 | 20.03 | 01Jan3000, 05:10 | 0.90 |
| P1-77 | 0.0087 | 19.90 | 01Jan3000, 05:10 | 0.88 |
| P1-78 | 0.0087 | 19.58 | 01Jan3000, 05:10 | 0.88 |
| P1-79 | 0.0100 | 22.46 | 01Jan3000, 05:10 | 1.01 |
| P1-80 | 0.0165 | 36.62 | 01Jan3000, 05:10 | 1.66 |
| P1-81 | 0.0018 | 4.31 | 01Jan3000, 05:05 | 0.18 |
| P1-82 | 0.0080 | 18.00 | 01Jan3000, 05:10 | 0.81 |
| P1-83 | 0.0174 | 38.50 | 01Jan3000, 05:10 | 1.75 |
| P1-84 | 0.0115 | 26.06 | 01Jan3000, 05:10 | 1.16 |
| P1-85 | 0.0066 | 15.05 | 01Jan3000, 05:10 | 0.67 |
| P1-86 | 0.0143 | 30.58 | 01Jan3000, 05:10 | 1.44 |
| P1-87 | 0.0082 | 17.92 | 01Jan3000, 05:10 | 0.83 |
| P1-88 | 0.0137 | 30.41 | 01Jan3000, 05:10 | 1.38 |
| P1-89 | 0.0138 | 26.96 | 01Jan3000, 05:10 | 1.39 |
| P1-90 | 0.0038 | 9.11 | 01Jan3000, 05:05 | 0.38 |
| P1-91 | 0.0017 | 4.12 | 01Jan3000, 05:05 | 0.17 |

| | | | | |
|--------|--------|--------|------------------|-------|
| P1-92 | 0.0044 | 10.24 | 01Jan3000, 05:05 | 0.44 |
| P1-93 | 0.0041 | 9.60 | 01Jan3000, 05:05 | 0.41 |
| P1-94 | 0.0044 | 9.85 | 01Jan3000, 05:10 | 0.44 |
| P1-95 | 0.0043 | 10.01 | 01Jan3000, 05:05 | 0.43 |
| P1-96 | 0.0179 | 38.28 | 01Jan3000, 05:10 | 1.80 |
| P1-97 | 0.0050 | 11.14 | 01Jan3000, 05:10 | 0.50 |
| P1-98 | 0.0124 | 27.71 | 01Jan3000, 05:10 | 1.25 |
| P1-99 | 0.0024 | 5.72 | 01Jan3000, 05:05 | 0.24 |
| R-C-11 | 0.0087 | 19.89 | 01Jan3000, 05:10 | 0.88 |
| R-JC1 | 0.0268 | 54.71 | 01Jan3000, 05:10 | 2.71 |
| R-JC10 | 0.0365 | 76.14 | 01Jan3000, 05:10 | 3.68 |
| R-JC12 | 0.0131 | 29.49 | 01Jan3000, 05:10 | 1.33 |
| R-JC13 | 0.0172 | 38.63 | 01Jan3000, 05:10 | 1.75 |
| R-JC15 | 0.0213 | 45.89 | 01Jan3000, 05:10 | 2.15 |
| R-JC16 | 0.0300 | 64.39 | 01Jan3000, 05:10 | 3.03 |
| R-JC19 | 0.0187 | 39.89 | 01Jan3000, 05:10 | 1.88 |
| R-JC2 | 0.0341 | 70.98 | 01Jan3000, 05:10 | 3.44 |
| R-JC20 | 0.0231 | 47.13 | 01Jan3000, 05:10 | 2.33 |
| R-JC22 | 0.0104 | 22.94 | 01Jan3000, 05:15 | 1.05 |
| R-JC23 | 0.0154 | 32.30 | 01Jan3000, 05:15 | 1.56 |
| R-JC24 | 0.0184 | 37.14 | 01Jan3000, 05:15 | 1.87 |
| R-JC27 | 0.0222 | 46.16 | 01Jan3000, 05:15 | 2.23 |
| R-JC3 | 0.0523 | 110.89 | 01Jan3000, 05:10 | 5.28 |
| R-JC4 | 0.0589 | 125.94 | 01Jan3000, 05:10 | 5.95 |
| R-JC5 | 0.0954 | 200.03 | 01Jan3000, 05:10 | 9.62 |
| R-JC6 | 0.1036 | 212.89 | 01Jan3000, 05:15 | 10.45 |
| R-JC7 | 0.1173 | 240.28 | 01Jan3000, 05:15 | 11.83 |
| R-JC8 | 0.1311 | 236.05 | 01Jan3000, 05:20 | 13.22 |
| R-JC9 | 0.0065 | 14.85 | 01Jan3000, 05:10 | 0.66 |
| R-P167 | 0.0107 | 23.35 | 01Jan3000, 05:10 | 1.08 |
| R-P169 | 0.0021 | 4.83 | 01Jan3000, 05:10 | 0.21 |
| R-P170 | 0.0117 | 25.57 | 01Jan3000, 05:10 | 1.18 |

Project: Pod1_S_curve Simulation Run: Pod1-10yr

Start of Run: 01Jan3000, 01:00 Basin Model: POD 1
 End of Run: 02Jan3000, 01:55 Meteorologic Model: S-Pattern 1(1.53in)
 Execution Time: 15Mar2006, 11:17:04 Control Specifications: Control 1

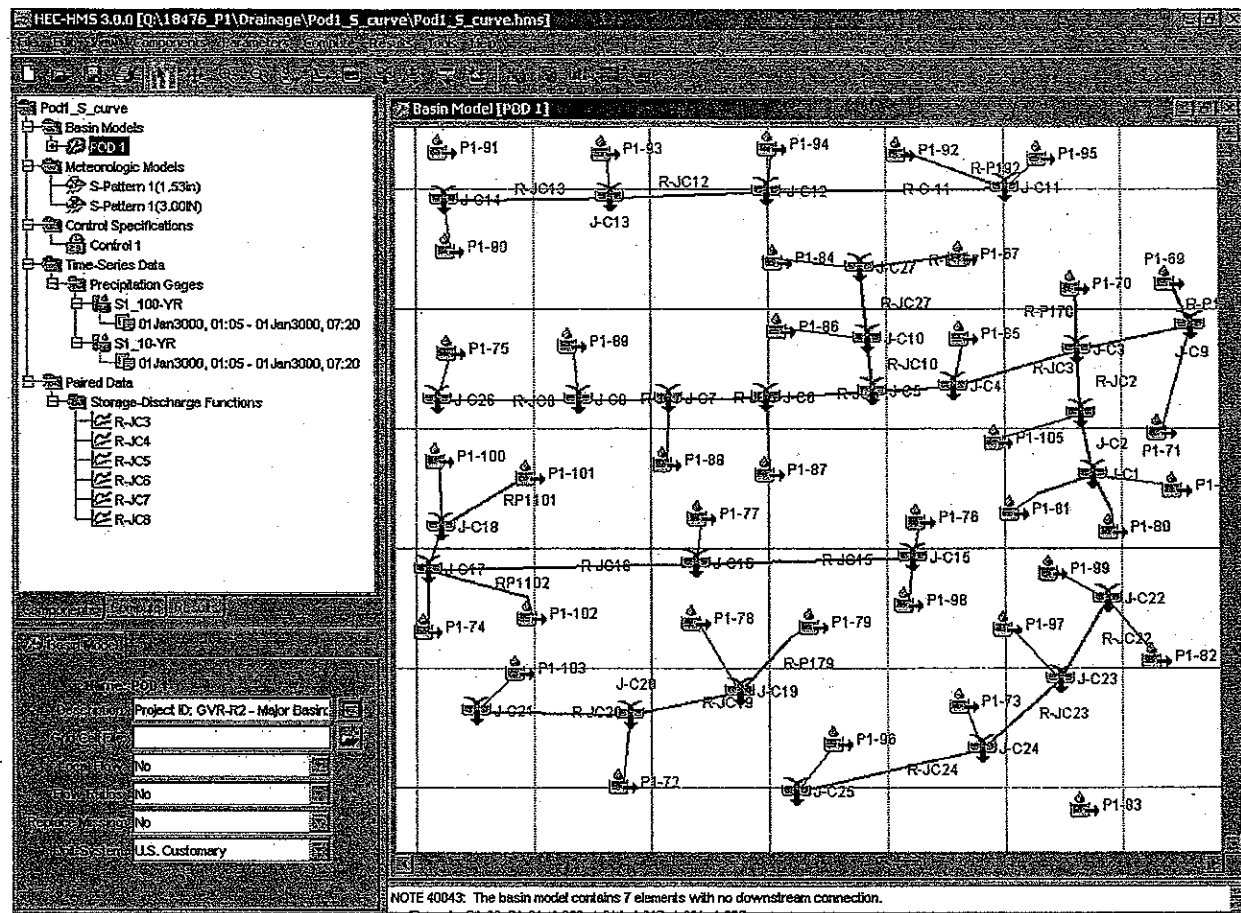
Volume Units: AC-FT

| Hydrologic Element | Drainage Area (MI ²) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|--------------------|----------------------------------|----------------------|------------------|----------------|
| J-C1 | 0.0268 | 20.66 | 01Jan3000, 05:15 | 0.94 |
| J-C10 | 0.0365 | 27.56 | 01Jan3000, 05:15 | 1.27 |
| J-C11 | 0.0087 | 7.45 | 01Jan3000, 05:10 | 0.30 |
| J-C12 | 0.0131 | 10.89 | 01Jan3000, 05:10 | 0.46 |
| J-C13 | 0.0172 | 14.15 | 01Jan3000, 05:10 | 0.60 |
| J-C14 | 0.0210 | 17.15 | 01Jan3000, 05:10 | 0.74 |
| J-C15 | 0.0213 | 17.58 | 01Jan3000, 05:10 | 0.74 |
| J-C16 | 0.0300 | 23.39 | 01Jan3000, 05:10 | 1.04 |
| J-C17 | 0.0548 | 42.48 | 01Jan3000, 05:10 | 1.91 |
| J-C18 | 0.0112 | 9.11 | 01Jan3000, 05:10 | 0.39 |
| J-C19 | 0.0187 | 15.28 | 01Jan3000, 05:10 | 0.65 |
| J-C2 | 0.0341 | 25.08 | 01Jan3000, 05:15 | 1.19 |
| J-C20 | 0.0231 | 17.44 | 01Jan3000, 05:15 | 0.80 |
| J-C21 | 0.0263 | 19.28 | 01Jan3000, 05:15 | 0.91 |
| J-C22 | 0.0104 | 8.72 | 01Jan3000, 05:10 | 0.36 |
| J-C23 | 0.0154 | 11.68 | 01Jan3000, 05:15 | 0.54 |
| J-C24 | 0.0184 | 12.18 | 01Jan3000, 05:20 | 0.64 |
| J-C25 | 0.0363 | 23.28 | 01Jan3000, 05:15 | 1.26 |
| J-C26 | 0.1378 | 90.05 | 01Jan3000, 05:20 | 4.63 |
| J-C27 | 0.0222 | 17.81 | 01Jan3000, 05:10 | 0.77 |
| J-C3 | 0.0523 | 37.66 | 01Jan3000, 05:15 | 1.83 |
| J-C4 | 0.0589 | 42.59 | 01Jan3000, 05:10 | 2.06 |
| J-C5 | 0.0954 | 69.83 | 01Jan3000, 05:15 | 3.33 |
| J-C6 | 0.1036 | 76.88 | 01Jan3000, 05:15 | 3.62 |
| J-C7 | 0.1173 | 86.58 | 01Jan3000, 05:15 | 4.10 |

| Hydrologic Element | Drainage Area (MI ²) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|--------------------|----------------------------------|----------------------|------------------|----------------|
| J-C8 | 0.1311 | 96.50 | 01Jan3000, 05:15 | 4.58 |
| J-C9 | 0.0065 | 5.55 | 01Jan3000, 05:10 | 0.23 |
| P1-100 | 0.0046 | 3.95 | 01Jan3000, 05:10 | 0.16 |
| P1-101 | 0.0066 | 5.50 | 01Jan3000, 05:10 | 0.23 |
| P1-102 | 0.0031 | 2.68 | 01Jan3000, 05:10 | 0.11 |
| P1-103 | 0.0032 | 2.76 | 01Jan3000, 05:10 | 0.11 |
| P1-105 | 0.0073 | 6.12 | 01Jan3000, 05:10 | 0.25 |
| P1-67 | 0.0107 | 8.95 | 01Jan3000, 05:10 | 0.37 |
| P1-68 | 0.0085 | 6.76 | 01Jan3000, 05:10 | 0.30 |
| P1-69 | 0.0021 | 1.81 | 01Jan3000, 05:10 | 0.07 |
| P1-70 | 0.0117 | 9.35 | 01Jan3000, 05:10 | 0.41 |
| P1-71 | 0.0044 | 3.80 | 01Jan3000, 05:10 | 0.15 |
| P1-72 | 0.0044 | 3.70 | 01Jan3000, 05:10 | 0.15 |
| P1-73 | 0.0030 | 2.58 | 01Jan3000, 05:10 | 0.10 |
| P1-74 | 0.0105 | 8.65 | 01Jan3000, 05:10 | 0.37 |
| P1-75 | 0.0067 | 1.04 | 01Jan3000, 05:15 | 0.06 |
| P1-76 | 0.0089 | 7.40 | 01Jan3000, 05:10 | 0.31 |
| P1-77 | 0.0087 | 7.46 | 01Jan3000, 05:10 | 0.30 |
| P1-78 | 0.0087 | 7.23 | 01Jan3000, 05:10 | 0.30 |
| P1-79 | 0.0100 | 8.29 | 01Jan3000, 05:10 | 0.35 |
| P1-80 | 0.0165 | 13.42 | 01Jan3000, 05:10 | 0.57 |
| P1-81 | 0.0018 | 1.55 | 01Jan3000, 05:10 | 0.06 |
| P1-82 | 0.0080 | 6.65 | 01Jan3000, 05:10 | 0.28 |
| P1-83 | 0.0174 | 14.09 | 01Jan3000, 05:10 | 0.61 |
| P1-84 | 0.0115 | 9.67 | 01Jan3000, 05:10 | 0.40 |
| P1-85 | 0.0066 | 5.61 | 01Jan3000, 05:10 | 0.23 |
| P1-86 | 0.0143 | 11.05 | 01Jan3000, 05:10 | 0.50 |
| P1-87 | 0.0082 | 6.52 | 01Jan3000, 05:10 | 0.29 |
| P1-88 | 0.0137 | 11.15 | 01Jan3000, 05:10 | 0.48 |
| P1-89 | 0.0138 | 9.61 | 01Jan3000, 05:15 | 0.48 |
| P1-90 | 0.0038 | 3.28 | 01Jan3000, 05:10 | 0.13 |
| P1-91 | 0.0017 | 1.48 | 01Jan3000, 05:05 | 0.06 |

| Hydrologic Element | Drainage Area (MI ²) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|--------------------|----------------------------------|----------------------|------------------|----------------|
| P1-92 | 0.0044 | 3.80 | 01Jan3000, 05:10 | 0.15 |
| P1-93 | 0.0041 | 3.54 | 01Jan3000, 05:10 | 0.14 |
| P1-94 | 0.0044 | 3.62 | 01Jan3000, 05:10 | 0.15 |
| P1-95 | 0.0043 | 3.71 | 01Jan3000, 05:10 | 0.15 |
| P1-96 | 0.0179 | 13.84 | 01Jan3000, 05:10 | 0.62 |
| P1-97 | 0.0050 | 4.09 | 01Jan3000, 05:10 | 0.17 |
| P1-98 | 0.0124 | 10.19 | 01Jan3000, 05:10 | 0.43 |
| P1-99 | 0.0024 | 2.07 | 01Jan3000, 05:10 | 0.08 |
| R-C-11 | 0.0087 | 7.27 | 01Jan3000, 05:10 | 0.30 |
| R-JC1 | 0.0268 | 20.24 | 01Jan3000, 05:15 | 0.94 |
| R-JC10 | 0.0365 | 27.50 | 01Jan3000, 05:15 | 1.27 |
| R-JC12 | 0.0131 | 10.61 | 01Jan3000, 05:10 | 0.46 |
| R-JC13 | 0.0172 | 13.87 | 01Jan3000, 05:10 | 0.60 |
| R-JC15 | 0.0213 | 16.46 | 01Jan3000, 05:15 | 0.74 |
| R-JC16 | 0.0300 | 22.28 | 01Jan3000, 05:15 | 1.05 |
| R-JC19 | 0.0187 | 14.53 | 01Jan3000, 05:15 | 0.65 |
| R-JC2 | 0.0341 | 25.01 | 01Jan3000, 05:15 | 1.19 |
| R-JC20 | 0.0231 | 17.35 | 01Jan3000, 05:15 | 0.80 |
| R-JC22 | 0.0104 | 8.26 | 01Jan3000, 05:15 | 0.36 |
| R-JC23 | 0.0154 | 10.95 | 01Jan3000, 05:20 | 0.54 |
| R-JC24 | 0.0184 | 12.12 | 01Jan3000, 05:20 | 0.64 |
| R-JC27 | 0.0222 | 17.52 | 01Jan3000, 05:15 | 0.78 |
| R-JC3 | 0.0523 | 38.03 | 01Jan3000, 05:15 | 1.83 |
| R-JC4 | 0.0589 | 42.56 | 01Jan3000, 05:10 | 2.06 |
| R-JC5 | 0.0954 | 71.17 | 01Jan3000, 05:15 | 3.33 |
| R-JC6 | 0.1036 | 77.18 | 01Jan3000, 05:15 | 3.62 |
| R-JC7 | 0.1173 | 86.89 | 01Jan3000, 05:15 | 4.10 |
| R-JC8 | 0.1311 | 89.04 | 01Jan3000, 05:20 | 4.58 |
| R-JC9 | 0.0065 | 5.46 | 01Jan3000, 05:10 | 0.23 |
| R-P167 | 0.0107 | 8.46 | 01Jan3000, 05:15 | 0.37 |
| R-P169 | 0.0021 | 1.75 | 01Jan3000, 05:10 | 0.07 |
| R-P170 | 0.0117 | 9.30 | 01Jan3000, 05:10 | 0.41 |

GOLDEN VALLEY RANCH



Precipitation

| Time | 100-yr, 6-hr | 10-yr, 6-hr |
|------------------|--------------|-------------|
| 01Jan3000, 01:05 | 0 | 0 |
| 01Jan3000, 01:20 | 0.024 | 0.012 |
| 01Jan3000, 01:35 | 0.048 | 0.024 |
| 01Jan3000, 01:50 | 0.075 | 0.038 |
| 01Jan3000, 02:05 | 0.099 | 0.05 |
| 01Jan3000, 02:20 | 0.123 | 0.063 |
| 01Jan3000, 02:35 | 0.15 | 0.077 |
| 01Jan3000, 02:50 | 0.174 | 0.089 |
| 01Jan3000, 03:05 | 0.198 | 0.101 |
| 01Jan3000, 03:20 | 0.222 | 0.113 |
| 01Jan3000, 03:35 | 0.261 | 0.133 |
| 01Jan3000, 03:50 | 0.297 | 0.151 |
| 01Jan3000, 04:05 | 0.354 | 0.181 |
| 01Jan3000, 04:20 | 0.414 | 0.211 |
| 01Jan3000, 04:35 | 0.648 | 0.33 |
| 01Jan3000, 04:50 | 1.131 | 0.577 |
| 01Jan3000, 05:05 | 2.502 | 1.276 |
| 01Jan3000, 05:20 | 2.733 | 1.394 |
| 01Jan3000, 05:35 | 2.793 | 1.424 |
| 01Jan3000, 05:50 | 2.85 | 1.454 |
| 01Jan3000, 06:05 | 2.886 | 1.472 |
| 01Jan3000, 06:20 | 2.916 | 1.487 |
| 01Jan3000, 06:35 | 2.949 | 1.504 |
| 01Jan3000, 06:50 | 2.973 | 1.516 |
| 01Jan3000, 07:05 | 3 | 1.53 |

18449 - PQD 1
HEC-HMS DATA RESULTS
C:\temp\20d61603\18476P1StdForm4.xls

18448 - POD 1
HEC-HMS DATA RESULTS
C:\temp\20061603\18476P1StdForm4.xls

Shed Parameters - Pod 1

| DEVELOPED CONDITIONS | | | | | |
|----------------------|------------|---------|---------|-------------|---------|
| Drainage Shed | Area (ac) | Elev dn | Elev up | Length (ft) | Slope |
| P1- 67 | 6.82056208 | 2528.9 | 2522.9 | 887 | 0.6764% |
| P1- 68 | 5.43982051 | 2525.4 | 2516.7 | 1232 | 0.7062% |
| P1- 69 | 1.33282528 | 2525.3 | 2520.4 | 468 | 1.0470% |
| P1- 70 | 7.47393562 | 2525.4 | 2513.3 | 1240 | 0.9758% |
| P1- 71 | 2.78410071 | 2520.9 | 2517.4 | 318 | 1.1006% |
| P1- 72 | 2.82990899 | 2503.1 | 2497.6 | 817 | 0.6732% |
| P1- 73 | 1.94640098 | 2497.6 | 2492.4 | 569 | 0.9139% |
| P1- 74 | 6.72332983 | 2498.9 | 2488.7 | 1038 | 0.9827% |
| P1- 75 | 4.28184465 | 2517.4 | 2489.2 | 2240 | 1.2589% |
| P1- 76 | 5.70996719 | 2502.2 | 2497.3 | 925 | 0.5297% |
| P1- 77 | 5.54738366 | 2499.8 | 2493.2 | 602 | 1.0963% |
| P1- 78 | 5.57736688 | 2509.5 | 2503.9 | 941 | 0.5951% |
| P1- 79 | 6.42571205 | 2512.2 | 2503.9 | 990 | 0.8384% |
| P1- 80 | 10.5553556 | 2530.2 | 2520.8 | 1144 | 0.8217% |
| P1- 81 | 1.17969603 | 2518.9 | 2515 | 286 | 1.3636% |
| P1- 82 | 5.12524784 | 2518.9 | 2506.1 | 952 | 1.3445% |
| P1- 83 | 11.151259 | 2519.5 | 2510.4 | 1186 | 0.7673% |
| P1- 84 | 7.38699887 | 2524.7 | 2517.8 | 821 | 0.8404% |
| P1- 85 | 4.23359978 | 2518.1 | 2510.9 | 726 | 0.9917% |
| P1- 86 | 9.13315676 | 2524.1 | 2507.5 | 1474 | 1.1262% |
| P1- 87 | 5.24655358 | 2519.5 | 2505.4 | 1294 | 1.0896% |
| P1- 88 | 8.75517188 | 2512.4 | 2502.4 | 1147 | 0.8718% |
| P1- 89 | 8.803328 | 2518.7 | 2496.9 | 2026 | 1.0760% |
| P1- 90 | 2.41032003 | 2502.3 | 2499.3 | 290 | 1.0345% |
| P1- 91 | 1.08501801 | 2514.2 | 2510 | 231 | 1.8182% |
| P1- 92 | 2.80949645 | 2508.4 | 2505.3 | 436 | 0.7110% |
| P1- 93 | 2.64865483 | 2502.7 | 2500.5 | 400 | 0.5500% |
| P1- 94 | 2.81184315 | 2503.1 | 2497.3 | 1054 | 0.5503% |
| P1- 95 | 2.72709787 | 2506.4 | 2503.1 | 430 | 0.7674% |
| P1- 96 | 11.4479667 | 2508.2 | 2489.6 | 1459 | 1.2748% |
| P1- 97 | 3.21621621 | 2508.9 | 2497.6 | 1103 | 1.0245% |
| P1- 98 | 7.95973724 | 2551.1 | 2497.3 | 1054 | 5.1044% |
| P1- 99 | 1.53009463 | 2513.9 | 2507.9 | 304 | 1.9737% |
| P1- 100 | 2.96143496 | 2494.8 | 2488.7 | 550 | 1.1091% |
| P1- 101 | 4.20201393 | 2498.1 | 2490.7 | 919 | 0.8052% |
| P1- 102 | 2.01486774 | 2495.7 | 2491.1 | 356 | 1.2921% |
| P1- 103 | 2.06835346 | 2495.6 | 2490.6 | 412 | 1.2136% |
| P1- 105 | 4.66530826 | 2519.1 | 2513 | 863 | 0.7068% |

Routing

Kinematic Routing

| Reach | Length (ft) | slope | Manning "n" | Sub reaches | Shape | Width | Side Slope (xH:V) |
|--------|-------------|--------|----------------|-------------|-----------|-------|----------------------|
| R-C-11 | 250 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC1 | 530 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC10 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC12 | 170 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC13 | 150 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC15 | 820 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC16 | 330 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC19 | 830 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC2 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-JC20 | 680 | 0.0109 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC22 | 1000 | 0.01 | 0.025 | 5 | Trapezoid | 100 | 0 |
| R-JC23 | 550 | 0.008 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC24 | 390 | 0.009 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC27 | 1130 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-JC9 | 200 | 0.01 | 0.023 | 5 | Trapezoid | 20 | 0.5 |
| RP1101 | 400 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| RP1102 | 380 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P167 | 650 | 0.005 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P169 | 330 | 0.01 | 0.025 | 5 | Trapezoid | 50 | 0.5 |
| R-P170 | 50 | 0.01 | 0.016 | 5 | Trapezoid | 20 | 0.5 |
| R-P179 | 200 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P180 | 1140 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P181 | 730 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |
| R-P192 | 250 | 0.007 | 0.016 | 5 | Trapezoid | 60 | 0.5 |

Modified Puls Routing

| Reach | Paired Data Table* |
|-------|-----------------------|
| R-JC3 | R-JC3 |
| R-JC4 | R-JC4 |
| R-JC5 | R-JC5 |
| R-JC6 | R-JC6 |
| R-JC7 | R-JC7 |
| R-JC8 | R-JC8 |

* See OpenSpace_upper-Mod Puls worksheet for data

OpenSpace_upper-Mod Puls

| F-JC8 | | R-J7 | | R-J6 | R-J5 | R-J4 | R-J3 |
|-------|-----------------|-------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Flow | sta450-0 | Flow | sta250-0 | sta600-250 | sta900-600 | sta1200-900 | 1350-1200 |
| (cfs) | Storage (ac-ft) | (cfs) | Storage (ac-ft) | Storage (ac-ft) | Storage (ac-ft) | Storage (ac-ft) | Storage (ac-ft) |
| 25 | 0.0851 | 25 | 0.0360 | 0.0547 | 0.0509 | 0.0008 | 0.0259 |
| 50 | 0.1633 | 50 | 0.0603 | 0.0897 | 0.0867 | 0.0014 | 0.0437 |
| 75 | 0.2662 | 75 | 0.0817 | 0.1219 | 0.1177 | 0.0019 | 0.0592 |
| 100 | 0.4082 | 100 | 0.1013 | 0.1520 | 0.1422 | 0.0025 | 0.0733 |
| 125 | 0.5713 | 125 | 0.1199 | 0.1804 | 0.1721 | 0.0030 | 0.0861 |
| 150 | 0.7372 | 150 | 0.1378 | 0.2073 | 0.1958 | 0.0034 | 0.0978 |
| 200 | 1.1608 | 175 | 0.1546 | 0.2336 | 0.2182 | 0.0039 | 0.1088 |
| 250 | 1.6430 | 200 | 0.1712 | 0.2704 | 0.2402 | 0.0043 | 0.1195 |
| 300 | 2.2029 | 250 | 0.2020 | 0.3228 | 0.2825 | 0.0051 | 0.1392 |



POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14



Arizona 35.14 N 114.18 W 2703 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 3

G.M. Bonnin, D. Todd, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland, 2003

Extracted: Tue Mar 14 2006

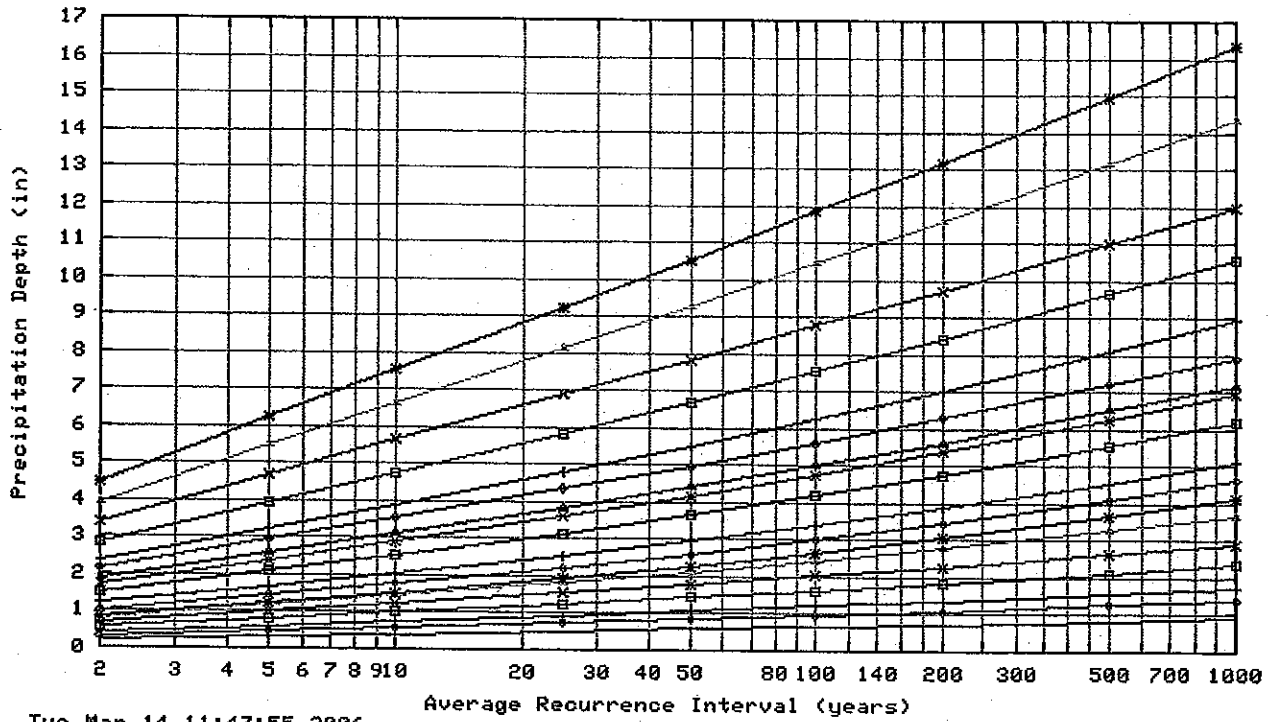
| Confidence Limits | Seasonality | Location Maps | Other Info | GIS data | Maps | Help | D |
|-------------------|-------------|---------------|------------|----------|------|------|---|
|-------------------|-------------|---------------|------------|----------|------|------|---|

| Precipitation Frequency Estimates (inches) | | | | | | | | | | | | | | | | | | |
|--|-------|--------|--------|--------|--------|---------|------|------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| ARI* (years) | 5 min | 10 min | 15 min | 30 min | 60 min | 120 min | 3 hr | 6 hr | 12 hr | 24 hr | 48 hr | 4 day | 7 day | 10 day | 20 day | 30 day | 45 day | 60 day |
| 2 | 0.23 | 0.35 | 0.43 | 0.58 | 0.72 | 0.82 | 0.89 | 1.04 | 1.22 | 1.51 | 1.75 | 1.91 | 2.18 | 2.36 | 2.87 | 3.40 | 3.95 | 4.46 |
| 5 | 0.33 | 0.50 | 0.62 | 0.83 | 1.03 | 1.17 | 1.25 | 1.44 | 1.68 | 2.08 | 2.40 | 2.60 | 2.96 | 3.23 | 3.96 | 4.69 | 5.51 | 6.24 |
| 10 | 0.40 | 0.61 | 0.75 | 1.01 | 1.25 | 1.44 | 1.53 | 1.76 | 2.05 | 2.53 | 2.90 | 3.13 | 3.55 | 3.90 | 4.77 | 5.64 | 6.64 | 7.53 |
| 25 | 0.49 | 0.75 | 0.93 | 1.26 | 1.55 | 1.82 | 1.95 | 2.22 | 2.56 | 3.15 | 3.61 | 3.85 | 4.36 | 4.81 | 5.85 | 6.89 | 8.14 | 9.25 |
| 50 | 0.57 | 0.86 | 1.07 | 1.44 | 1.78 | 2.12 | 2.29 | 2.59 | 2.97 | 3.66 | 4.17 | 4.42 | 4.98 | 5.53 | 6.70 | 7.83 | 9.29 | 10.54 |
| 100 | 0.65 | 0.98 | 1.22 | 1.64 | 2.03 | 2.44 | 2.67 | 3.00 | 3.42 | 4.19 | 4.76 | 5.01 | 5.62 | 6.26 | 7.56 | 8.78 | 10.45 | 11.86 |
| 200 | 0.73 | 1.10 | 1.37 | 1.84 | 2.28 | 2.79 | 3.07 | 3.44 | 3.88 | 4.75 | 5.39 | 5.64 | 6.29 | 7.03 | 8.44 | 9.73 | 11.62 | 13.19 |
| 500 | 0.84 | 1.27 | 1.58 | 2.12 | 2.63 | 3.27 | 3.67 | 4.08 | 4.55 | 5.55 | 6.26 | 6.50 | 7.21 | 8.12 | 9.64 | 10.99 | 13.18 | 14.96 |
| 1000 | 0.93 | 1.41 | 1.75 | 2.36 | 2.92 | 3.68 | 4.17 | 4.62 | 5.10 | 6.20 | 6.97 | 7.19 | 7.95 | 8.98 | 10.56 | 11.95 | 14.37 | 16.33 |

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

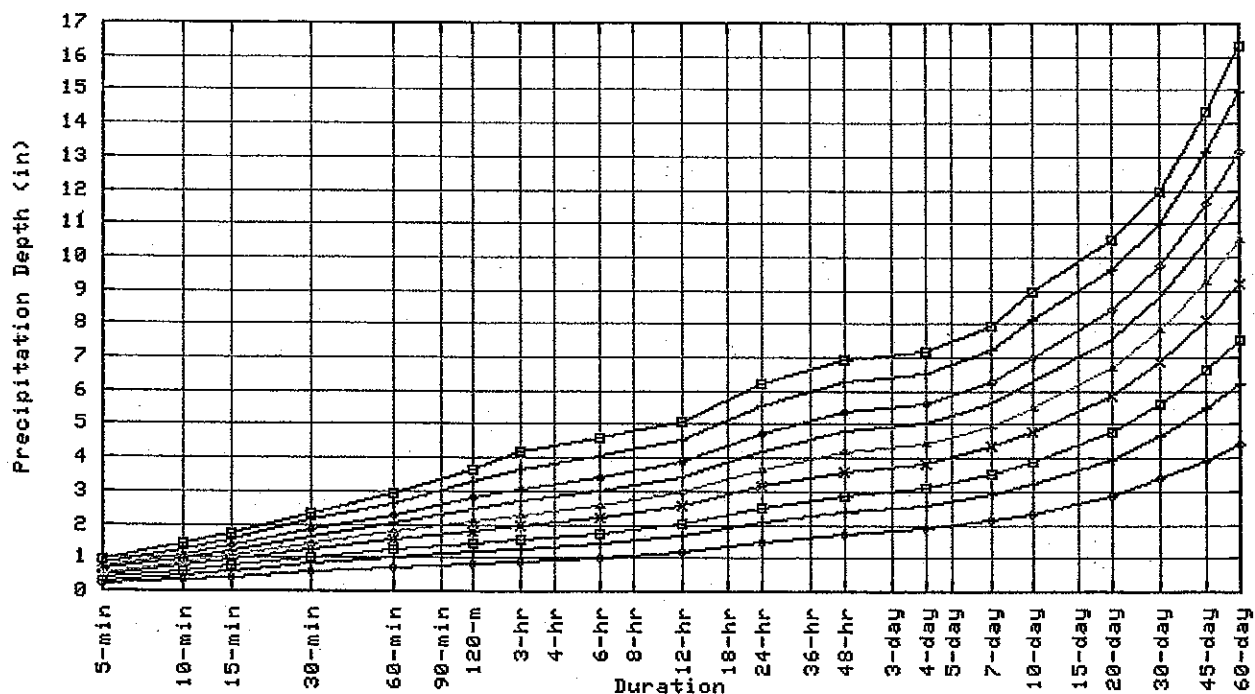
Partial duration based Point Precipitation Frequency Estimates Version: 3
35.14 N 114.18 W 2703 ft



Tue Mar 14 11:47:55 2006

| Duration | | | |
|----------|---|---------|---|
| 5-min | — | 120-min | — |
| 10-min | — | 3-hr | — |
| 15-min | — | 6-hr | — |
| 30-min | — | 12-hr | — |
| 60-min | — | 24-hr | — |
| 48-hr | — | 30-day | — |
| 4-day | — | 45-day | — |
| 7-day | — | 60-day | — |
| 10-day | — | | |
| 20-day | — | | |

Partial duration based Point Precipitation Frequency Estimates Version: 3
35.14 N 114.18 W 2703 ft



Tue Mar 14 11:47:55 2006

| Average Recurrence Interval (years) | |
|--|---|
| 2 | — |
| 5 | — |
| 10 | — |
| 25 | — |
| 50 | — |
| 100 | — |
| 200 | — |
| 500 | — |
| 1000 | — |

Confidence Limits -

| * Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches) | | | | | | | | | | | | | | | | | | |
|--|-------|--------|--------|--------|--------|---------|------|------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| ARI** (years) | 5 min | 10 min | 15 min | 30 min | 60 min | 120 min | 3 hr | 6 hr | 12 hr | 24 hr | 48 hr | 4 day | 7 day | 10 day | 20 day | 30 day | 45 day | 60 day |
| 2 | 0.27 | 0.42 | 0.52 | 0.70 | 0.86 | 1.00 | 1.06 | 1.23 | 1.40 | 1.72 | 1.97 | 2.15 | 2.46 | 2.65 | 3.22 | 3.83 | 4.49 | 5.12 |
| 5 | 0.39 | 0.60 | 0.74 | 0.99 | 1.23 | 1.42 | 1.48 | 1.69 | 1.93 | 2.36 | 2.70 | 2.92 | 3.33 | 3.62 | 4.43 | 5.29 | 6.26 | 7.16 |
| 10 | 0.48 | 0.73 | 0.90 | 1.21 | 1.50 | 1.75 | 1.83 | 2.07 | 2.35 | 2.86 | 3.27 | 3.52 | 4.00 | 4.37 | 5.34 | 6.35 | 7.56 | 8.65 |
| 25 | 0.59 | 0.90 | 1.11 | 1.50 | 1.85 | 2.20 | 2.31 | 2.60 | 2.94 | 3.57 | 4.07 | 4.33 | 4.90 | 5.40 | 6.57 | 7.75 | 9.28 | 10.64 |
| 50 | 0.68 | 1.03 | 1.28 | 1.72 | 2.13 | 2.58 | 2.72 | 3.05 | 3.43 | 4.15 | 4.72 | 4.98 | 5.61 | 6.21 | 7.53 | 8.84 | 10.61 | 12.13 |
| 100 | 0.77 | 1.18 | 1.46 | 1.96 | 2.43 | 2.98 | 3.18 | 3.57 | 3.98 | 4.79 | 5.41 | 5.68 | 6.36 | 7.08 | 8.54 | 9.96 | 11.97 | 13.71 |
| 200 | 0.87 | 1.33 | 1.65 | 2.22 | 2.75 | 3.42 | 3.73 | 4.13 | 4.58 | 5.46 | 6.15 | 6.43 | 7.17 | 8.01 | 9.57 | 11.09 | 13.36 | 15.33 |
| 500 | 1.02 | 1.56 | 1.93 | 2.60 | 3.22 | 4.09 | 4.53 | 4.99 | 5.52 | 6.46 | 7.22 | 7.49 | 8.30 | 9.33 | 10.99 | 12.61 | 15.24 | 17.51 |
| 1000 | 1.15 | 1.75 | 2.17 | 2.93 | 3.62 | 4.67 | 5.22 | 5.73 | 6.32 | 7.30 | 8.10 | 8.35 | 9.21 | 10.40 | 12.13 | 13.82 | 16.75 | 19.23 |

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.

** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

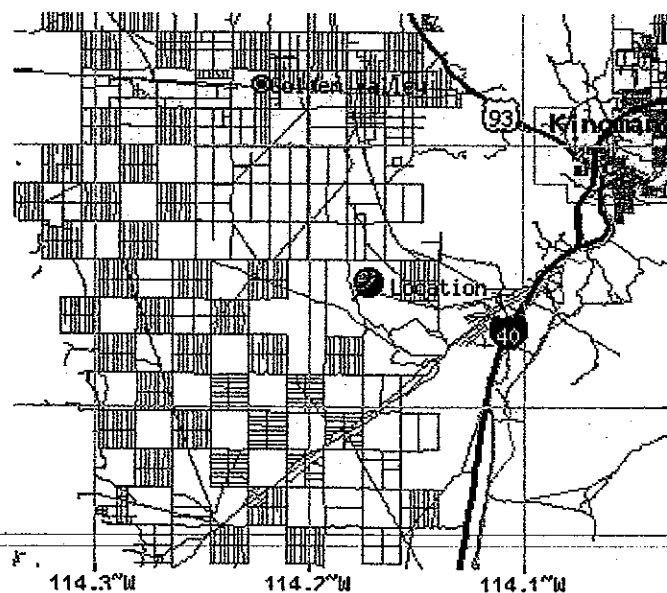
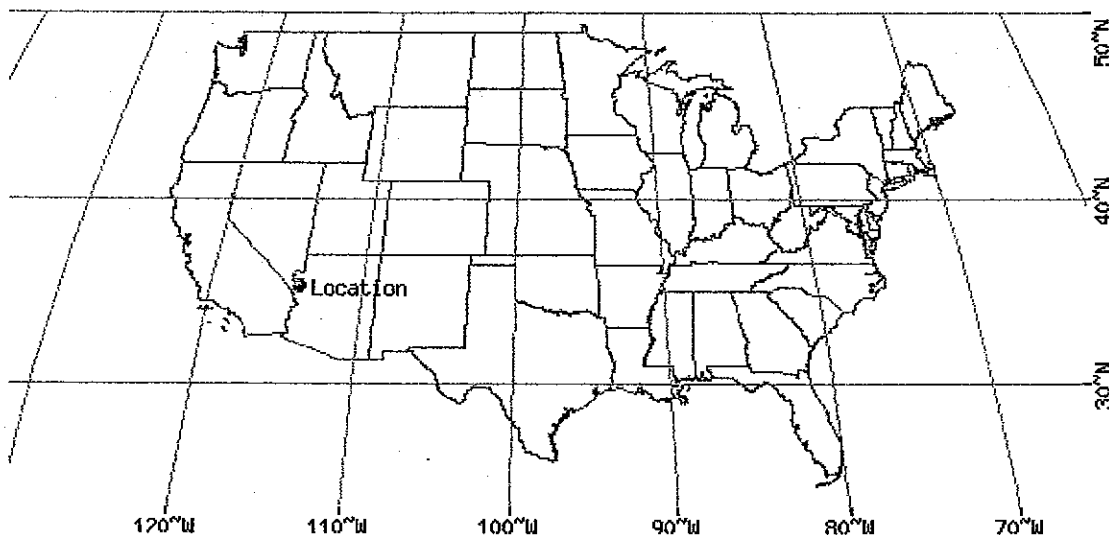
| ARI** (years) | 5 min | 10 min | 15 min | 30 min | 60 min | 120 min | 3 hr | 6 hr | 12 hr | 24 hr | 48 hr | 4 day | 7 day | 10 day | 20 day | 30 day | 45 day | 60 day |
|------------------|-------|--------|--------|--------|--------|---------|------|------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| 2 | 0.19 | 0.29 | 0.36 | 0.49 | 0.60 | 0.69 | 0.76 | 0.91 | 1.06 | 1.34 | 1.55 | 1.71 | 1.95 | 2.10 | 2.56 | 3.01 | 3.45 | 3.87 |
| 5 | 0.28 | 0.42 | 0.52 | 0.70 | 0.87 | 0.98 | 1.06 | 1.25 | 1.45 | 1.84 | 2.12 | 2.31 | 2.64 | 2.87 | 3.52 | 4.15 | 4.80 | 5.40 |
| 10 | 0.33 | 0.51 | 0.63 | 0.85 | 1.05 | 1.19 | 1.29 | 1.51 | 1.77 | 2.23 | 2.56 | 2.79 | 3.16 | 3.46 | 4.22 | 4.98 | 5.78 | 6.50 |
| 25 | 0.41 | 0.62 | 0.78 | 1.04 | 1.29 | 1.47 | 1.60 | 1.86 | 2.16 | 2.74 | 3.16 | 3.40 | 3.85 | 4.25 | 5.14 | 6.07 | 7.05 | 7.96 |
| 50 | 0.46 | 0.70 | 0.87 | 1.18 | 1.46 | 1.70 | 1.86 | 2.13 | 2.46 | 3.14 | 3.62 | 3.88 | 4.37 | 4.85 | 5.86 | 6.85 | 7.99 | 9.02 |
| 100 | 0.52 | 0.79 | 0.98 | 1.32 | 1.63 | 1.92 | 2.12 | 2.41 | 2.77 | 3.55 | 4.10 | 4.37 | 4.91 | 5.46 | 6.58 | 7.64 | 8.92 | 10.07 |
| 200 | 0.57 | 0.87 | 1.08 | 1.46 | 1.80 | 2.14 | 2.37 | 2.70 | 3.08 | 3.96 | 4.58 | 4.86 | 5.43 | 6.07 | 7.29 | 8.41 | 9.86 | 11.13 |
| 500 | 0.65 | 0.98 | 1.22 | 1.64 | 2.03 | 2.46 | 2.74 | 3.08 | 3.48 | 4.52 | 5.25 | 5.52 | 6.14 | 6.91 | 8.23 | 9.40 | 11.06 | 12.46 |
| 1000 | 0.70 | 1.06 | 1.32 | 1.78 | 2.20 | 2.68 | 3.03 | 3.38 | 3.80 | 4.94 | 5.76 | 6.03 | 6.69 | 7.57 | 8.92 | 10.12 | 11.96 | 13.46 |

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.

** These precipitation frequency estimates are based on a partial duration maxima series. ARI is the Average Recurrence Interval.

Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Maps -



These maps were produced using a direct map request from the
U.S. Census Bureau Mapping and Cartographic Resources
Tiger Map Server.

Please read disclaimer for more information.

LEGEND

- State
- County
- Indian Resv
- Lake/Pond/Ocean
- Street
- Expressway
- Highway
- Connector
- Stream
- Military Area
- National Park
- Other Park
- City
- County

Scale 1:228583

*average—true scale depends on monitor resolution

Other Maps/Photographs -

View USGS digital orthophoto quadrangle (DOQ) covering this location from TerraServer; USGS Aerial Photograph may also be available from this site. A DOQ is a computer-generated image of an aerial photograph in which image displacement caused by terrain relief and camera tilts has been removed. It combines the image characteristics of a photograph with the geometric qualities of a map. Visit the National Digital Orthophoto Program (NDOP) for more information.

Watershed/Stream Flow Information -

Find the Watershed for this location using the U.S. Environmental Protection Agency's site.

Climate Data Sources -

Precipitation frequency results are based on data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to our documentation.

Using the National Climatic Data Center's (NCDC) station search engine, locate other climate stations within:

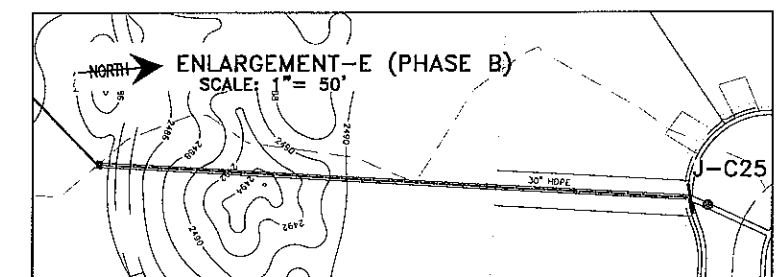
\pm 30 minutes ...OR... \pm 1 degree of this location (35.14/-114.18). Digital ASCII data can be obtained directly from NCDC.

Find Natural Resources Conservation Service (NRCS) SNOTEL (SNOWpack TELEmetry) stations by visiting the Western Regional Climate Center's state-specific SNOTEL station maps.

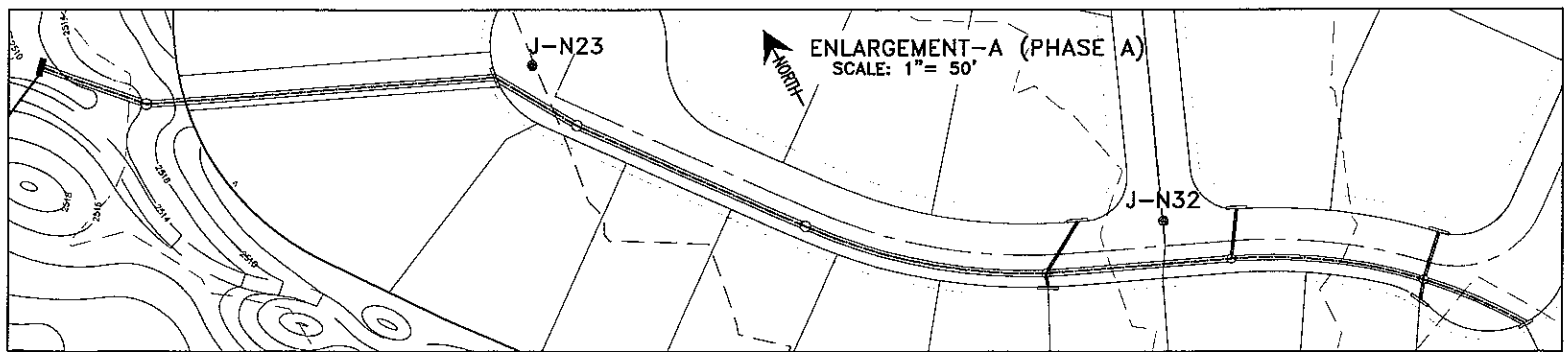
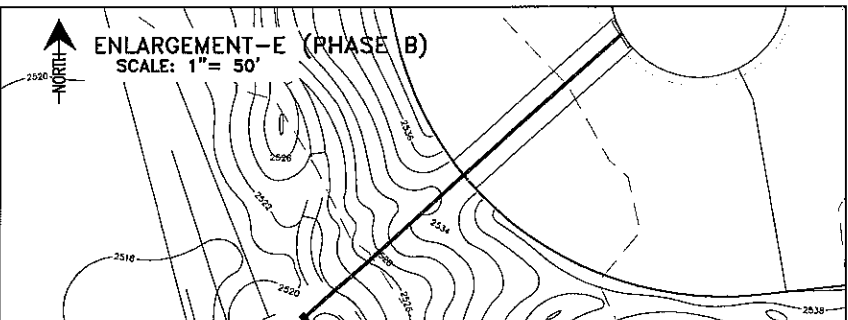
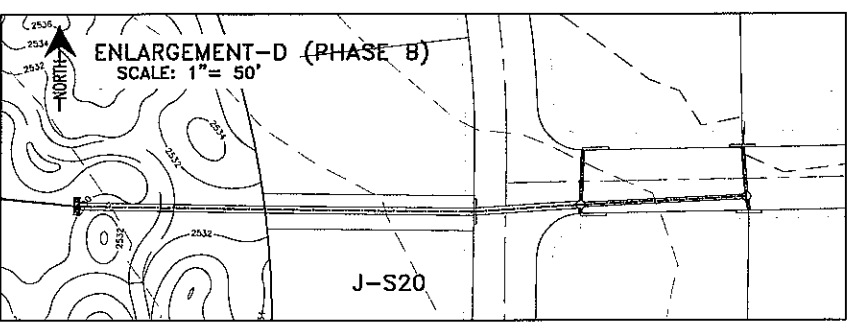
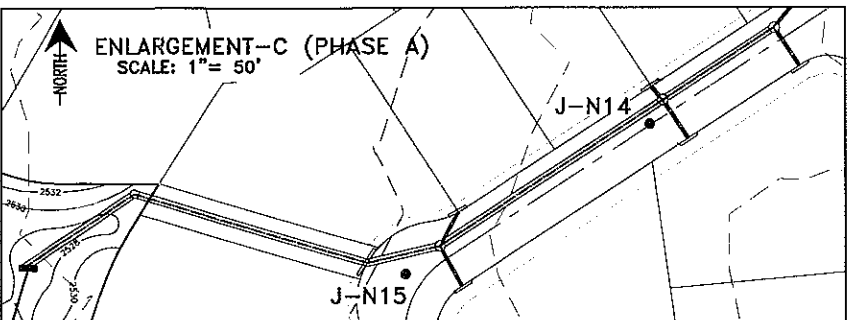
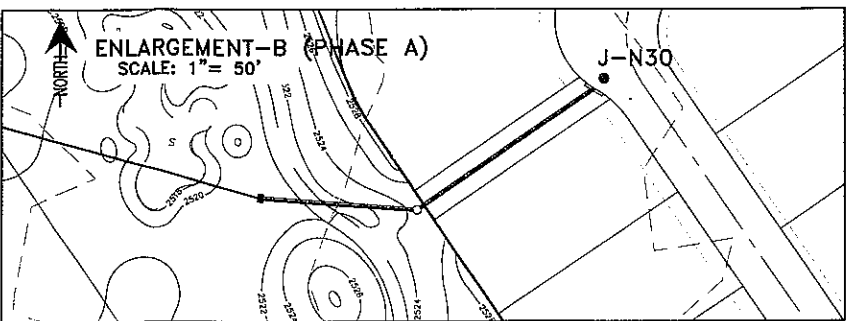
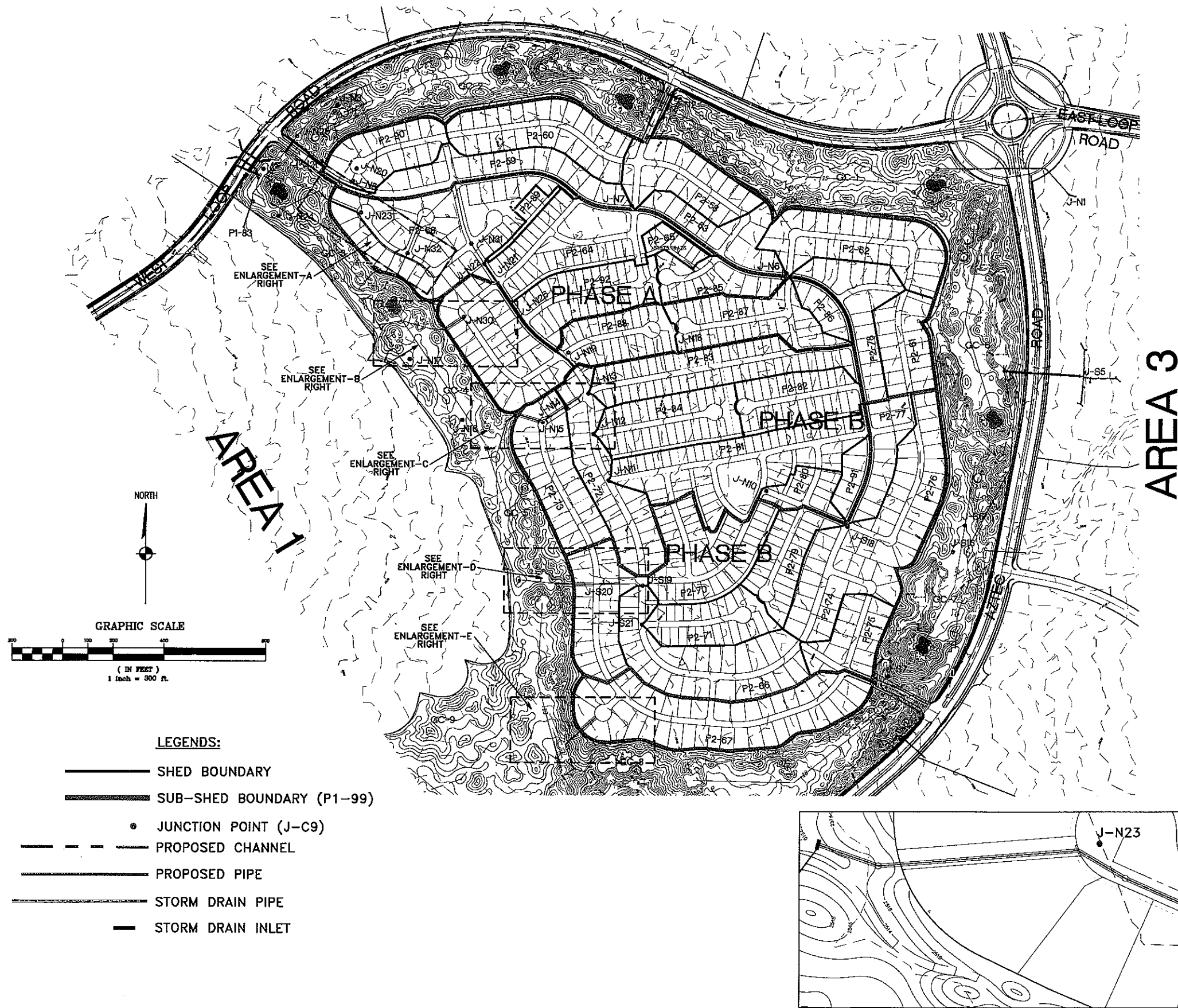
Hydrometeorological Design Studies Center
DOC/NOAA/National Weather Service
1325 East-West Highway
Silver Spring, MD 20910

(301) 713-1669
Questions?: HDSC.Questions@noaa.gov

Disclaimer



Q:\18476_P2\DWG\drainage\Figure 3 - POD 2 Drainage Scheme-RAM.dwg, 6/1/2006 1:33:05 PM, \\vg-ps1\hp5500-tr-ps



GOLDEN VALLEY RANCH

APPENDIX A

AREA 3 – RESULTS AND DATA

- **HEC-HMS 100-YR, 6-HR SIMULATION**
- **HEC-HMS 10-YR, 6-HR SIMULATION**
- **NOAA ATLAS 14 PRECIPITATION**
- **STANDARD FORM 4**

Project: Pod3_S-curve Simulation Run: Pod3 100-yr

Start of Run: 01Jan3000, 01:00 Basin Model: Pod 3
 End of Run: 02Jan3000, 01:55 Meteorologic Model: S-Pattern 1(3.00in)
 Execution Time: 15Mar2006, 10:34:21 Control Specifications: Control 1

Volume Units: AC-FT

| Hydrologic Element | Drainage Area (MI ²) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|--------------------|----------------------------------|----------------------|------------------|----------------|
| J-S5 | 0.1092 | 187.25 | 01Jan3000, 05:15 | 10.27 |
| P3-43 | 0.0393 | 60.15 | 01Jan3000, 05:10 | 2.88 |
| P3-44 | 0.0281 | 37.59 | 01Jan3000, 05:15 | 2.06 |
| P3-45 | 0.0025 | 4.59 | 01Jan3000, 05:05 | 0.18 |
| P3-50 | 0.0303 | 59.14 | 01Jan3000, 05:15 | 3.20 |
| P3-60 | 0.0396 | 70.55 | 01Jan3000, 05:15 | 4.18 |

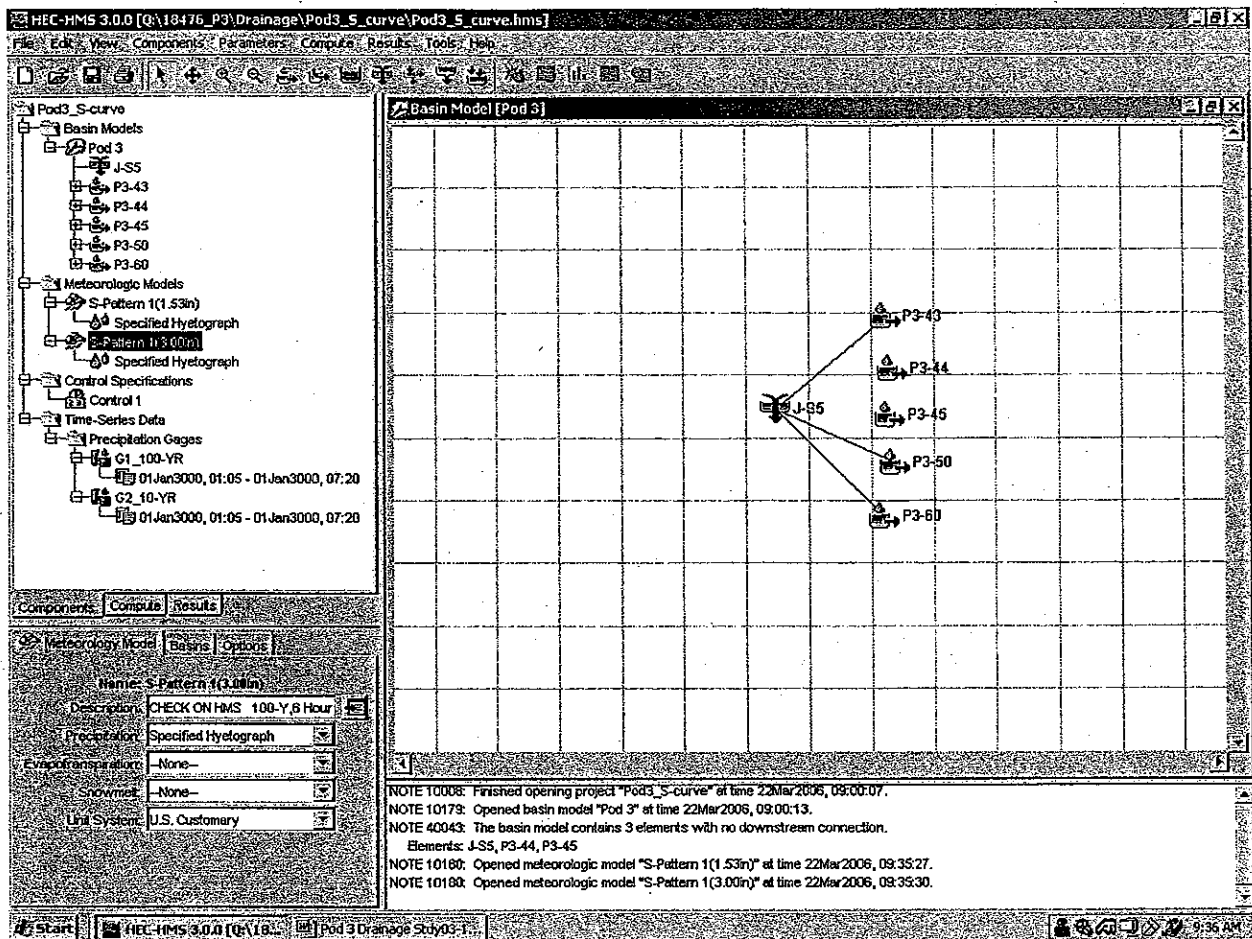
Project: Pod3_S-curve Simulation Run: Pod3 10yr

Start of Run: 01Jan3000, 01:00 Basin Model: Pod 3
 End of Run: 02Jan3000, 01:55 Meteorologic Model: S-Pattern 1(1.53in)
 Execution Time: 15Mar2006, 10:34:47 Control Specifications: Control 1

Volume Units: AC-FT

| Hydrologic Element | Drainage Area (MI2) | Peak Discharge (CFS) | Time of Peak | Volume (AC-FT) |
|--------------------|---------------------|----------------------|------------------|----------------|
| J-S5 | 0.1092 | 64.13 | 01Jan3000, 05:15 | 3.40 |
| P3-43 | 0.0393 | 15.90 | 01Jan3000, 05:15 | 0.76 |
| P3-44 | 0.0281 | 9.68 | 01Jan3000, 05:15 | 0.54 |
| P3-45 | 0.0025 | 1.28 | 01Jan3000, 05:10 | 0.05 |
| P3-50 | 0.0303 | 22.34 | 01Jan3000, 05:15 | 1.14 |
| P3-60 | 0.0396 | 25.89 | 01Jan3000, 05:15 | 1.49 |

GOLDEN VALLEY RANCH

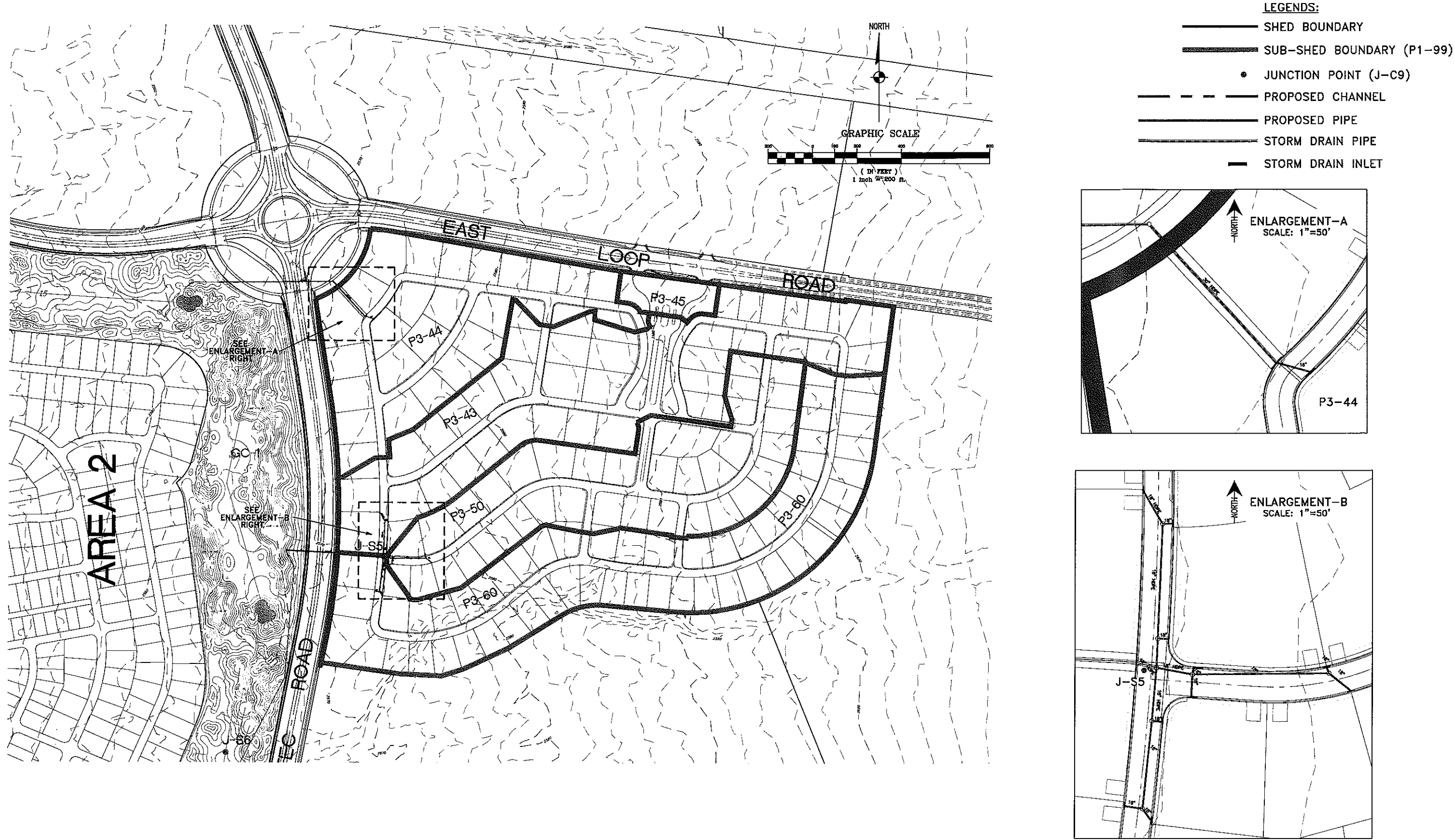


Precipitation

| Time | 100-yr, 6-hr | 10-yr, 6-hr |
|------------------|--------------|-------------|
| 01Jan3000, 01:05 | 0 | 0 |
| 01Jan3000, 01:20 | 0.024 | 0.012 |
| 01Jan3000, 01:35 | 0.048 | 0.024 |
| 01Jan3000, 01:50 | 0.075 | 0.038 |
| 01Jan3000, 02:05 | 0.099 | 0.05 |
| 01Jan3000, 02:20 | 0.123 | 0.063 |
| 01Jan3000, 02:35 | 0.15 | 0.077 |
| 01Jan3000, 02:50 | 0.174 | 0.089 |
| 01Jan3000, 03:05 | 0.198 | 0.101 |
| 01Jan3000, 03:20 | 0.222 | 0.113 |
| 01Jan3000, 03:35 | 0.261 | 0.133 |
| 01Jan3000, 03:50 | 0.297 | 0.151 |
| 01Jan3000, 04:05 | 0.354 | 0.181 |
| 01Jan3000, 04:20 | 0.414 | 0.211 |
| 01Jan3000, 04:35 | 0.648 | 0.33 |
| 01Jan3000, 04:50 | 1.131 | 0.577 |
| 01Jan3000, 05:05 | 2.502 | 1.276 |
| 01Jan3000, 05:20 | 2.733 | 1.394 |
| 01Jan3000, 05:35 | 2.793 | 1.424 |
| 01Jan3000, 05:50 | 2.85 | 1.454 |
| 01Jan3000, 06:05 | 2.886 | 1.472 |
| 01Jan3000, 06:20 | 2.916 | 1.487 |
| 01Jan3000, 06:35 | 2.949 | 1.504 |
| 01Jan3000, 06:50 | 2.973 | 1.516 |
| 01Jan3000, 07:05 | 3 | 1.53 |

18478-Pod 3
HEC-HMS DATA RESULTS
Q:\18476_P3\Drainage\Drainage Study\18476P3StdFmt4.xls

Q:\18476_P3\Drawings\drainage\Figure 3 - POD 3 Drainage Scheme-RAM.dwg, 6/1/2006 1:38:05 PM, \\vg-ps1\hp5500-tr-ps

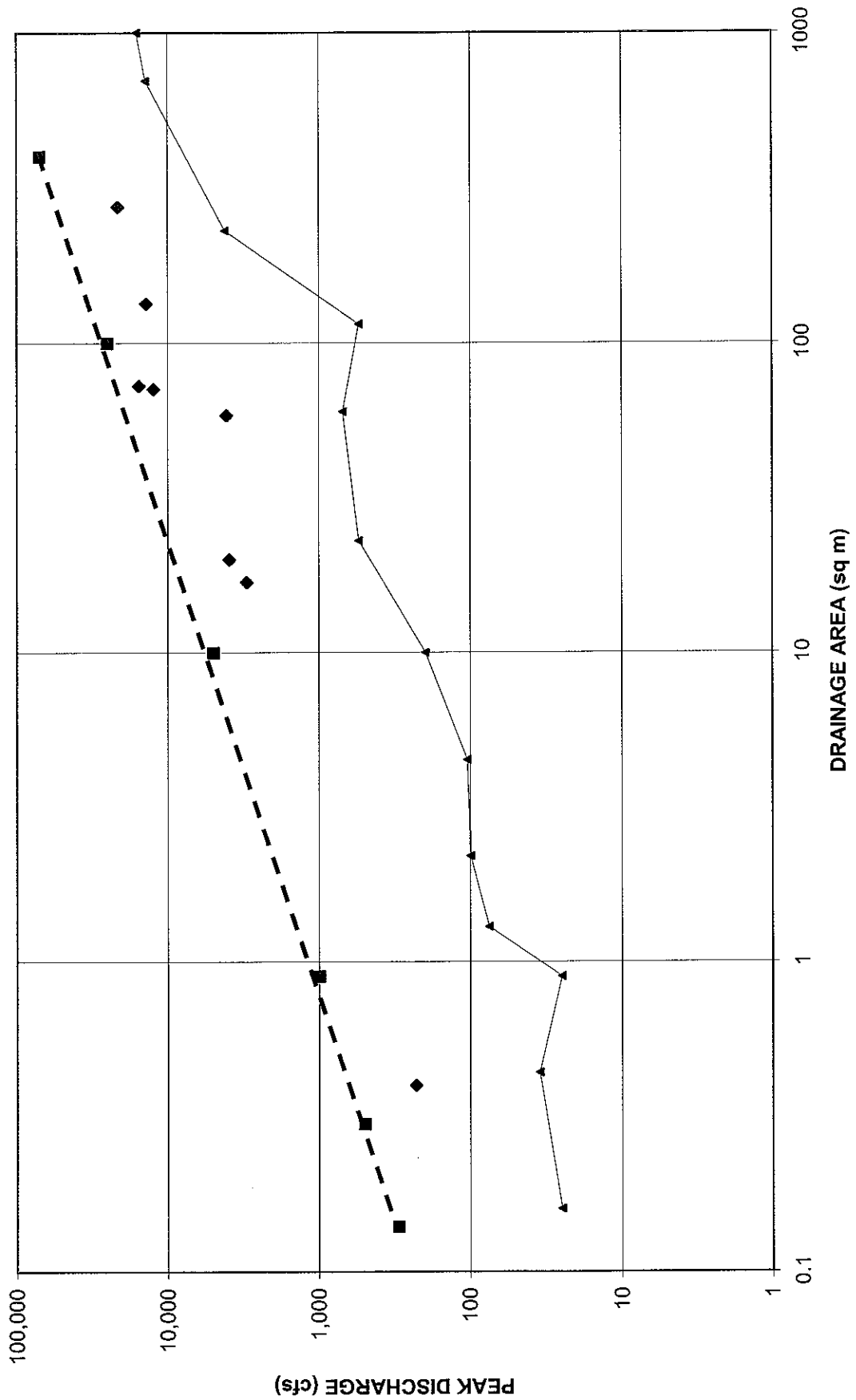


GOLDEN VALLEY RANCH

APPENDIX E

INDIRECT METHODS DISCHARGE VERIFICATION- FLOW RELATIONSHIP

Q100 DATA POINTS FOR GOLDEN VALLEY SHEDS VS RELATIONSHIP LINE FOR REGION 10



◆ GOLDEN VALLEY SHEDS ■ Figure 10-17 (R10) Relationship Line —▲ Lower Limits of Data Scatter

**Golden Valley Ranch
Technical Drainage Study**

| GOLDEN VALLEY SHEDS | | | RELATIONSHIP LINE | | LOWER LIMIT POINTS | |
|---------------------|--------------|---------------------|-------------------|-----------|--------------------|-----------|
| Basin | Area (sq mi) | Discharge | Area (sq mi) | Discharge | Area (sq mi) | Discharge |
| A | 134 | 13,980 | 0.14 | 300 | 0.16 | 25 |
| B | 1.1 | | 0.3 | 500 | 0.44 | 35 |
| C | 71 | 12,500 | 0.9 | 1000 | 0.9 | 25 |
| D | 16.9 | 3,020 | 10 | 5000 | 1.3 | 75 |
| E | 20 | 3941 | 100 | 25000 | 2.2 | 100 |
| G | 0.4 | 230 | 400 | 70000 | 4.5 | 105 |
| H | 58.4 | 4,120 | | | 10 | 200 |
| M | 72.8 | 15,560 | | | 23 | 550 |
| N | 134.5 | 11,950 ² | | | 60 | 700 |
| Q | 275 | 21,490 | | | 115 | 550 |
| | | | | | 230 | 4200 |
| | | | | | 700 | 14000 |
| | | | | | 1000 | 16000 |
| | | | | | | |

GOLDEN VALLEY RANCH

APPENDIX F

**PLANS – NOT INCLUDED
(SEE GRADING PLANS THIS PROJECT)**

Exist.

HEC-RAS Plan: It River: RIVER-1 Reach: Reach-1 Profile: PF 1

| Reach | River Sta | Profile | Channel | Ch Elev | W S Elev | Ch Elev | Ch W S | E G Elev | E G S Elev | Vel Chnl | Flow Area | Top Width | Friction Co |
|---------|-----------|---------|------------|---------|----------|---------|---------|----------|------------|----------|-----------|-----------|-------------|
| Reach-1 | 12815 | PF 1 | 6286.00 | 2665.00 | 2669.27 | 2669.27 | 2669.27 | 2669.93 | 0.016741 | 6.63 | 967.85 | 769.69 | 1.01 |
| Reach-1 | 12845 | PF 1 | 6286.00 | 2660.55 | 2663.93 | 2664.25 | 2664.25 | 2665.07 | 0.023286 | 9.08 | 754.83 | 566.09 | 1.24 |
| Reach-1 | 12914 | PF 1 | 6286.00 | 2666.65 | 2660.56 | 2660.60 | 2660.60 | 2661.26 | 0.014051 | 7.44 | 972.85 | 708.22 | 0.98 |
| Reach-1 | 12100 | PF 1 | 6286.00 | 2662.64 | 2656.22 | 2656.59 | 2656.59 | 2657.61 | 0.024848 | 8.75 | 668.19 | 475.99 | 1.26 |
| Reach-1 | 11822 | PF 1 | 6286.00 | 2648.08 | 2651.80 | 2651.91 | 2651.91 | 2652.64 | 0.015798 | 5.85 | 878.15 | 593.19 | 0.96 |
| Reach-1 | 11631 | PF 1 | 6286.00 | 2645.20 | 2647.72 | 2648.15 | 2648.15 | 2649.18 | 0.024214 | 6.70 | 681.54 | 450.13 | 1.17 |
| Reach-1 | 11504 | PF 1 | 6286.00 | 2642.65 | 2646.08 | 2646.11 | 2646.11 | 2646.95 | 0.014380 | 6.09 | 864.89 | 527.60 | 0.94 |
| Reach-1 | 11410 | PF 1 | 6286.00 | 2640.45 | 2643.60 | 2644.06 | 2644.06 | 2645.17 | 0.027013 | 8.82 | 645.96 | 405.00 | 1.30 |
| Reach-1 | 11309 | PF 1 | 6286.00 | 2639.65 | 2642.66 | 2642.55 | 2642.55 | 2643.59 | 0.014150 | 6.98 | 829.71 | 461.94 | 0.96 |
| Reach-1 | 11208 | PF 1 | 6286.00 | 2638.09 | 2641.41 | 2641.41 | 2641.41 | 2642.19 | 0.013641 | 6.45 | 902.90 | 554.55 | 0.93 |
| Reach-1 | 11000 | PF 1 | 6286.00 | 2636.04 | 2638.41 | 2638.90 | 2638.90 | 2640.07 | 0.033284 | 9.09 | 629.13 | 444.26 | 1.42 |
| Reach-1 | 10999 | PF 1 | Lat Struct | | | | | | | | | | |
| Reach-1 | 10972 | PF 1 | 6286.00 | 2633.40 | 2635.67 | 2636.70 | 2636.70 | 2639.82 | 0.151594 | 16.36 | 384.23 | 389.95 | 2.90 |
| Reach-1 | 10811 | PF 1 | 6270.31 | 2631.31 | 2635.80 | 2635.77 | 2635.77 | 2636.72 | 0.013922 | 7.68 | 816.06 | 428.52 | 0.98 |
| Reach-1 | 10606 | PF 1 | 6250.08 | 2629.63 | 2633.29 | 2633.14 | 2633.14 | 2634.05 | 0.011472 | 7.02 | 890.20 | 463.61 | 0.89 |
| Reach-1 | 10385 | PF 1 | 6250.08 | 2626.24 | 2629.83 | 2629.83 | 2629.83 | 2630.90 | 0.013938 | 8.27 | 755.75 | 356.36 | 1.00 |
| Reach-1 | 10000 | PF 1 | 6250.08 | 2617.70 | 2624.21 | 2624.36 | 2624.36 | 2625.77 | 0.014678 | 10.01 | 624.36 | 229.10 | 1.07 |